CENSUS OF INDIA, 1931

VOLUME XIV

MADRAS

PART I

REPORT

BY

M. W. M. YEATTS,

OF THE INDIAN CIVIL SERVICE,

Superintendent of Census Operations, Madras

C. I. (31)

D 9465(a)
148/33

MADRAS

PRINTED BY THE SUPERINTENDENT, GOVERNMENT PRESS, AND PUBLISHED BY THE GOVERNMENT OF INDIA CENTRAL PUBLICATION BRANCH, CALCUTTA

1932

VOLUME XIV

GENERAL TABLE OF CONTENTS OF THE FOUR PARTS.

PART I.

THE REPORT.

		PAGE
INTRODUCTION		1
CHAPTER.		
I.	Distribution and movement of the population	12
II.	The population of cities, towns and villages	52
III.	Birthplace and migration	74
IV.	Age	97
V.	Sex	129
VI.	Civil condition	153
VII.	Infirmities	170
VIII.	Occupation	191
IX.	Literacy	264
X.	Mothertongue and subsidiary languages	286
XI.	Religion	317
XII.	Race, tribe or caste	332

LIST OF MAPS AND DIAGRAMS.

Maps.

1.	Social	*Facing title page*
2.	Key	1
3.	Density by districts	21
4.	Percentage variation in population by districts	31
5.	Change in density by districts	33
6.	Irrigation and forests	35
7.	Density by taluks	35
8.	Percentage change in population—regional variation	39
9.	Calicut city—density by wards	70
10.	Madura city—density by wards	71
11.	Emigration	93
12.	Sex ratio by districts	129
13.	Sex ratio by wards—Calicut city	139
14.	Do. —Coimbatore city	139
15.	Do. —Madura city	140
16.	Do. —Trichinopoly city	140
17.	Sex ratio—taluk variation	140
18.	Insanity	174
19.	Deafmutism	175
20.	Blindness	177
21.	Leprosy	183
22.	Water Power	206
23.	Distribution of handlooms by districts	226
24.	Literacy—male	266
25.	Literacy—female	267
26.	Mothertongue frontiers	286
27.	Linguistic	420

Diagrams.

1.	Provinces in order of density on bases proportional to area	16
2.	Rates of increase, 1921–31	16
3.	Growth of population, 1871–1931, for provinces and Great Britain	17
4.	Average district by population and area	18
5.	Madras districts in order of population	19
6.	Population growth, 1891–1931, in four characteristic areas	20
7.	Madras districts in order of density	21

PAGE

Diagrams—cont.

8. Rates of natural increase of population in British India and Madras Presidency per 1,000 of inhabitants during each year of 1921–30 28
9. Trend of the birthrate, the deathrate and the natural increase in population during the 30 years period 1901–30 in British India and Madras Presidency 29
10. Proportion of the births constituting the natural increase of the population in British India and Madras Presidency in each year during 1921–30 .. 29
11. Urban and rural elements in 1,000 population by natural divisions in order of urban proportion 53
12. Rate of growth of urban population by classes, 1881–1931 56
13. Rate of growth of total and urban population, 1881–1931 56
14. Contribution in each natural division (except Agency) of each class of town to 1,000 urban population 60
15. Population of chief cities of India (1871–1931) 61
16. Rates of growth since 1881 for typical Madras towns 68
17. Relative district contributions to overseas emigration—Ceylon 85
18. Do. do. —Malaya 88
19. Dimensions of migration from five South Indian areas 91
20. 200,000 actual age returns by sex and district 102
21. Age composition per 1,000 103
22. Age proportions per 1,000 by sex for Madras and England and Wales .. 104
23. 10,000 population by age periods 105
24. Age-group histories, 1891–1931 106
25. Sex deathrates, 1920–30 108
26. Age proportion by religion 109
27. Age proportions—district divergence from presidency mean 110
28. Do. —sex divergence in districts 110
29. Proportion per 1,000, at certain ages, 1891–1931 113
30. Communities by age groups, 1931 115
31. Infantile mortality per mille of live births in British India and Madras Presidency from 1892–1930 116
32. Proportion per 1,000 at age 15–50 for cities, as compared with province, and by sexes 118
33. Madras districts—divergence of male-female ratio from parity 131
34. Sex ratio, 1891–1931, by natural divisions 131
35. District sex ratios—variation, 1891–1931 132
36. Sex ratio, by age-group and community 135
37. Madras cities—divergence of male-female ratio from parity 136
38. Civil condition of 1,000 of each sex at five-year periods 155
39. Unmarried per 1,000 females by religion and natural division 157
40. Proportion married of 1,000 females at certain ages, 1891–1931 158
41. Female child marriage 159
42. Population and infirmities, 1891–1931 172
43. Insane per 100,000 of population by ten-year periods 174
44. Deafmutes per 100,000 of population by ten-year periods 175
45. Blind per 100,000 of population by ten-year periods 177
46. Lepers per 100,000 of population by ten-year periods 182
47. Occupational distribution of population per 1,000 193
48. Chief occupations of those actually occupied per 1,000 total population .. 194
49. Relative importance of subsidiary occupations 194
50. Rate of growth, 1921–31, in certain typical occupations 195
51. Relative importance of the different classes of factories in Madras during 1931 220
52. Province and state literacy per 1,000, aged 5 and over—males and females. 267
53. Literacy by age-group and sex, 1901–31 268
54. Literacy per 1,000 adults by community and sex 271
55. Scholars in institutions and male literacy, 1901–31 273
56. Rates of increase of Christians in natural divisions and of total province population, 1891–1931 324

The Paliyan photographs .. .. *Facing* 370

PART II.

IMPERIAL AND PROVINCIAL TABLES.

Imperial Tables.

TABLE.		PAGE
I.	Area, houses and population	1
II.	Variation in population since 1891	3
III.	Cities, towns and villages classified by population	7
IV.	Cities and towns classified by population with variation for fifty years	9
V.	Cities and towns arranged territorially with population by religion	17
VI.	Birthplace—	
	I. Districts and States	25
	II. Cities	36
VII.	Age, sex and civil condition—	
	I. Districts and States	43
	II. Cities	91
VIII.	Civil condition by age for selected communities	97
IX.	Infirmities—	
	I. Distribution by age	101
	II. Distribution by Districts and States	103
X.	Occupation or means of livelihood—	
	I. Provincial summary	105
	II. District, State and City	116
XI. XII.	Not extracted for Madras.	
XIII.	Literacy by religion and age—	
	I. Districts and States	255
	II. Cities	272
XIV.	Literacy by selected communities	275
XV.	Language—	
	I. Mothertongue	279
	II. Subsidiary languages	285
XVI.	Religion—	
	I. Main religions	299
	II. Details for Hindu and Christian	302
XVII.	Race, Tribe or Caste—	
	I. Communities in alphabetical order	305
	II. Territorial distribution of principal communities	307
XVIII.	Selected tribes—Variation	
	I. Districts	311
	II. Taluks	315
XIX.	Europeans and allied races and Anglo-Indians by race and age—	
	I. Districts and States	317
	II. Cities	321

Provincial Tables.

I.	Area and population of taluks	325
II.	Population of taluks by religion and literacy	331

PART III.

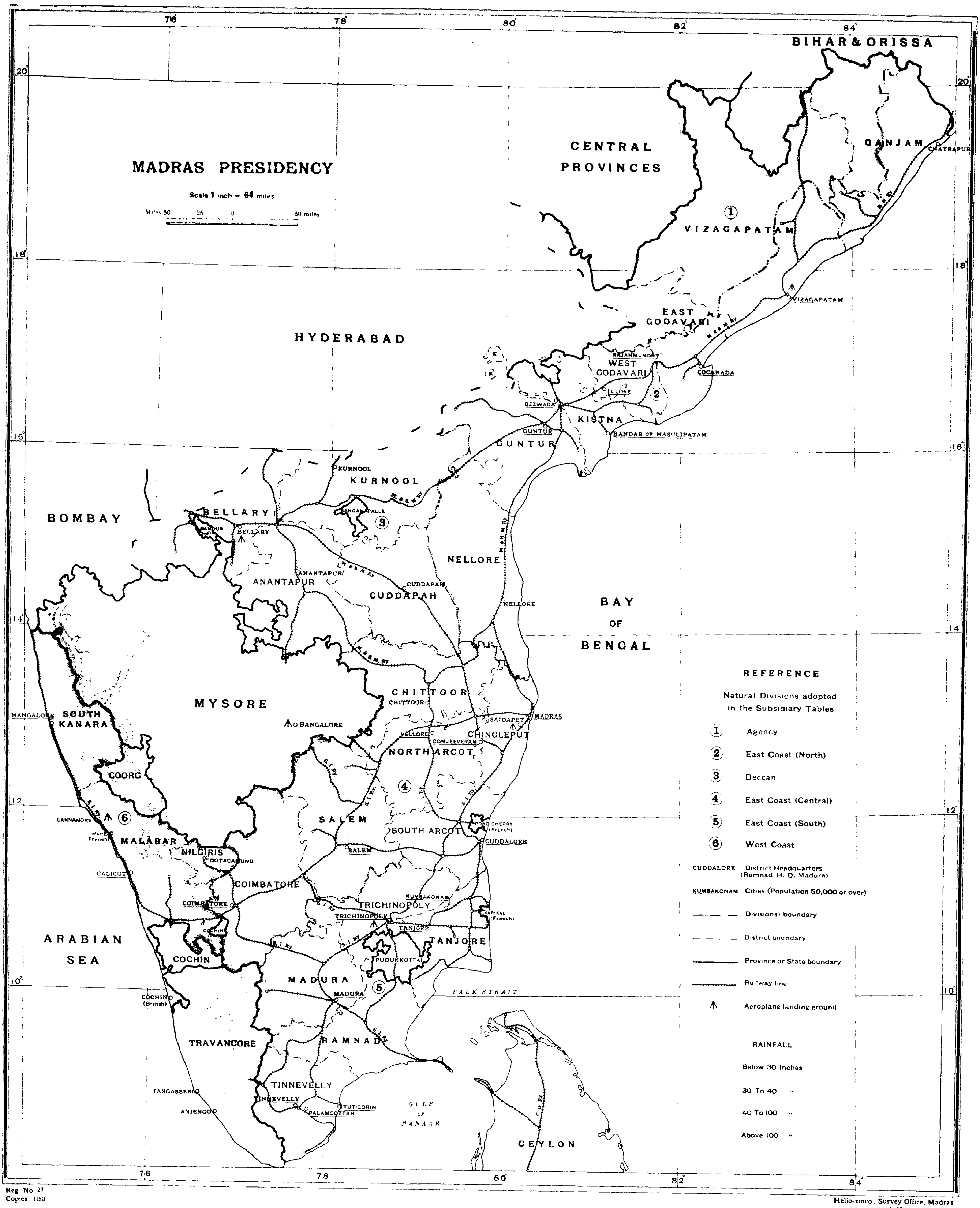
PROVINCIAL TABLES.

TABLE.		PAGE
I.	Area and population of taluks	1
II.	Population of taluks by religion and literacy	7
III.	Population of taluks, municipalities and towns by age and sex	19

PART IV

THE ADMINISTRATION REPORT

CHAPTER.		PAGE
I.	Enumeration	1
II.	Abstraction and Tabulation	16
III.	Finance	31



Reg No 27
Copies 1150

Helio-zinco., Survey Office, Madras
1932

CENSUS OF INDIA, 1931

MADRAS

IMPERIAL SERIES, VOLUME XIV, PART I

THE REPORT ON THE CENSUS

INTRODUCTION.

MADRAS census history may be said to begin with a computation mentioned by the Court of Directors in 1687 which gave Madras as it then was (Fort St. George and villages around) a population of 300,000. How this was arrived at or the precise area covered is far from clear and the extreme ' roundness ' of the figure suggests a guess rather than even a computation. Indian populations were usually estimated above their actual figure ; the first regular census of 1871 proved this, and Madras' 300,000 in 1687 (*c*) is an example. It is improbable that within 47 years of the establishment of the Company's factory the population had reached a lakh. **Census history since 1687.**

2. Census history goes back a long way in Madras apart from the early effort above mentioned. The following table shows the results of the various attempts :—

1802 ..	.. 9·5 millions.	1831 ..	.. 15·5 millions.	1856 ..	.. 23·1 millions.
1822 ..	.. 13·5 „	1837 ..	.. 13·9 „	1861 ..	.. 24·7 „
1826 ..	.. 15·0 „	1851 ..	.. 22·3 „	1866 ..	.. 26·5 „

The first two included North Kanara and ' Seringapatam ' but excluded Kurnool, not then (nor till 1839) part of the presidency.

These enumerations approximated in widely differing degrees to modern ideas of a census. The 1802 record embodies in some cases calculations of population based on comparative revenues while the Madras city figure of 600,000 was computed from grain consumption. The Board of Revenue's reference which produced this census asked significantly for ' the computed population ' further remarking that if time did not allow of the village being taken as the unit, the ' division ' might be. It frequently was. In essence, this call by the Board represented the beginnings of the present statistical framework. Administrative divisions seem to have been but uncertainly known for the Board sought enlightenment also on the ' number and names of the principal divisions of your district '.

The 1822 enumeration was carried out on a form devised by Sir Thomas Munro for his census-taking of 1802 in the Ceded Districts. Its details comprised only sex and age, the last vaguely as ' old ' and ' young '. No Europeans were included. Males outnumbered females by 450,000. A count was held for Madras city which yielded 462,051, 46,000 of whom were said to inhabit the Nawab of the Carnatic's palace. The Superintendent of Police commented with pleasure on the absence of any opposition or distrust.

The Government desired a periodical enumeration and as a result the Board of Revenue carried out a three-yearly count done mostly at jamabandi and based on enquiries made then. It was the existence of these early efforts that led to the Court of Directors holding Madras up as a model when they condemned certain Murshidabad figures as mere estimates and directed the Government of India to seek from the Government of Madras the means whereby a census had been taken ' without offence or alarm to the people '. The 1837 drop in population illustrates the effects of epidemics and famine. It is doubtful whether any figure for Ganjam before 1840 could be anything but a guess so

far as the interior parts are concerned, so constant was the preoccupation with internal commotion, rebellion and zamindari truculence.

More systematic census-taking opened with the five-yearly sequence of which the first item gave the population for fasli 1260 (1850–51). All Madras censuses before the imperial series were referred to the fasli, not the calendar year. An enumeration form was prescribed, borrowed from the North-West Provinces, and the need for accuracy stressed. The population was divided into agricultural and non-agricultural, Hindu and non-Hindu, adults and children. The child-adult frontier was put at 12 for males, 10 for females. Later the non-Hindu section was subdivided into Muslim and others. It was held that no census of Madras city could be taken without legislative backing, apparently because of the lack of co-operation, if not active opposition that might be expected. This seems to have been a pessimistic deduction from alleged indifference and 'contumacy' displayed towards an enquiry connected with a proposed tax on wheels and horses, surely a very different matter from a population census. The city population was therefore estimated at 720,000. A census was also taken in 1851 of persons resident in Madras who had been born in Great Britain and Ireland and of their wives and children.

1851 showed a 60 per cent increase over 1837, Madura district 200 per cent. This was attributed to better enumeration control and the addition of Kurnool; probably the rapid recovery that accompanies better times following famine contributed to an unusual rise. The excess of males continued and was the subject of comment by Government and Directors. The Madras Government then suggested an all-India simultaneous ten-yearly census and one was contemplated for 1861 but given up owing to the disturbed conditions prevailing after the Mutiny. The Madras five-yearly enumerations continued however. The first imperial census showed 31·2 millions, so the five-year sequence seems to have erred, save as regards Madras city, rather by under than over statement. A continuing improvement is observable from 1802 onwards in closeness of enumeration and till the net was complete unusual accretions in population were rather to be expected at each census.

None of these early enumerations asked about civil condition. Nor did the first of the imperial series, for that matter. It was considered that 'as marriage is almost universal among adults, the result of any enquiries upon that subject would scarcely repay the trouble and suspicion they would occasion'.

3. The sixty years since the first imperial census show no profound variation in enumeration procedure, for the essentials have remained unaffected; house list has preceded enumeration and this last has had two stages, preliminary and final. The agency in the first two imperial censuses as in all the earlier counts was the village officer, to whom ultimately most administrative matters find their way, but special enumerators were for the first time appointed for towns in 1871. 1891 saw the appearance in force of the enumerator as we know him and the introduction of a night-time final enumeration. 1901's contribution was slip-tabulation which greatly simplified procedure and reduced cost, while 1911 saw the introduction of the special industrial schedule; this was issued to all industrial establishments employing twenty or more persons and constituted in essence a separate industrial census. 1921 brought the railway census within the scope of the ordinary district administration.

The first imperial census asked most of the standard questions one expects at any census, age, sex, religion, caste, 'country of birth' (as an alternative to 'race or nationality'), occupation, literacy and infirmities. The second added civil condition and language while birthplace became an independent query. Thereafter there was little alteration in the schedule. For the three censuses 1901–1921, it was identical save that Muslim sect was asked in 1921.

The population of the presidency in 1871 was 31¼ millions and in 1921 42⅓ millions. The most interesting decades of the series are 1871–1881 and 1911–1921. The first showed a decrease, the second an increase of only 2 per cent. The first reflected the great famine of 1877–78, the second the influenza pandemic of 1918. 1881–1891, the decade following the famine, showed a 15 per cent increase, a rate never approached before or since; even 10 per cent was not reached till 1921–1931.

From the aspect of cost, the series can be divided into two groups (*a*) 1871–1901 and (*b*) 1901 onwards. Cost tended to rise steadily in (*a*) and reached Rs. 4,72,000 in 1891. The introduction of slip-tabulation in 1901 nearly halved the cost. Group (*b*) shows also a considerable rise from Rs. 2,85,000 to Rs. 5,15,000 in 1921; that census suffered however from the doubled salaries and other costs which obtained then as compared with 1911.

1931 Census General.

4. The seventh imperial ten-yearly census took place on the night of 26th February 1931. The Census Act X of 1929 supplemented by rules of the central and local governments provided the authority for the various stages. There were no changes from 1921 in the provincial limits but the ten years saw the disappearance of one district—the short-lived Agency division—and the emergence of another, West Godavari, formed by the scission of seven taluks from the former Kistna. During the decade the five Indian States were removed from the control of the Madras Government and placed directly under the Government of India represented by an Agent to the Governor-General. A consequence of the change was that the Collectors of Trichinopoly, Kurnool and Bellary ceased to be ex-officio political agents. It was important to preserve direct contact and control and on my proposal, the Collectors of Kurnool and Bellary were appointed political agents for census purposes. Pudukkottai State appointed a census officer of wide experience.

5. Census schedules the world over cannot but have a strong family resemblance for such standard questions as age, sex, civil condition will always appear. Thus the 1931 schedule resembled inevitably its 1921 predecessor. Differences however were none the less considerable. The definition of a census 'house' was altered in order to produce a more objective approach to the real habitation unit connoted by the term. Age, which always in past censuses had considered only completed years, switched over this time to the nearest birthday. The change was made at the request of the actuary who prepares the life tables from the Indian census figures. Greater precision and some extension marked the language aspect; 'mothertongue' was sought instead of the looser 'language ordinarily spoken in the household' of 1921 and previous years, while a separate column invited information as to other languages in common use.

The most noticeable changes affected occupation and industry. Earlier censuses had gone straight to the actual occupation pursued by each person (and by the maintaining person, in the case of dependents); 1931 required first a classification of every one as 'Earner or Dependent' and then a division of occupations into principal or subsidiary with the proviso that only an 'Earner' could have a principal occupation.

The special industrial census carried out in 1911 and 1921 by means of a separate return was abandoned in 1931. A good deal of the matter in it was not concerned with the population census at all and was more suited for treatment by, e.g., the Industries Department. Tabulation of the information collected in this schedule had produced colossal tables which no one save under grave compulsion was likely to read. On the other hand definite and continuing demographic interest attaches to the extent to which the people are wage-earners in organized industry; hence a new column in the 1931 schedule to provide for information on this point. This new column gave rise to many difficulties in interpretation. The same applied to the alterations in the approach to occupation.

Previous censuses had made considerable use of the household schedule, particularly among the European community. The use of this differential method was apt to be misunderstood and the reasons which had originally justified it no longer obtained. As an experiment, therefore, its use was abandoned in Madras city and in Bangalore Civil and Military Station. Special endeavours were made to interest the European community in the change and I have to acknowledge with gratitude the assistance given by the European Association in making it known and by the local Rotary Club in providing me with a forum in which to expound this and other census points. The change was a complete success and there is no need in Madras presidency for any further employment of the household schedule.

Minor changes were the taking of sect for Hindus and Jains as well as for Christians and Muslims.

An attempt was made by means of an enquiry carried out on a separate schedule to collect facts about 'educated unemployment'. This enquiry lacked the legal backing of the ordinary schedule and the results were disappointing.

These changes will be fully dealt with in the various chapters of this report. Actually retrenchment considerations produced the disappearance in tabulation of several of them, e.g., the industrial information collected. Christian sects disappeared and only the broad classification Roman Catholic, Syrian, and Others remained. Sect of other communities was given up. One need not regret the disappearance of sect particularity.

Census divisions and agency.

6. I had hoped to make more use of the village officers and revenue inspectors in both stages of the census, enumeration and tabulation, than has hitherto been done. Political conditions were however difficult and unsettled and Collectors and others whom I consulted were opposed to anything which might involve more work for their subordinates. So long as the census date is in the middle of the land revenue collection season it is unlikely that the existing administrative framework will be usable as it ought to be. The possibility of a change of date was suggested to the Census Commissioner.

The general enumeration scheme therefore followed 1921. The main object is to build up a system which will enable us, to quote an old karnam who had seen many censuses, to 'catch every man'; that is after all the first principle of any census. The system should obviously fit in as closely as possible with the ordinary administration. The human factor enters at the very first stage in the person of the enumerator and the size of the unit entrusted to him must be governed by his abilities and the circumstances of his appointment. The real census unit is therefore the block of 25–30 houses. In cities blocks can be larger and the unit in Madras City was sixty houses and in Madura city fifty. Rural blocks of more than thirty were countenanced where local circumstances clearly indicated this as practicable and desirable. Undue rigidity in a census framework is to be deprecated and provided the correct principles are absorbed discretion by local officers should be encouraged. The census should be a net, with a mesh definite and comprehensible and yet adjustable to local peculiarities, rather than a sheet of expanded metal pressed down upon all alike. The new definition of a house would, I think, permit of the standard size of block being raised.

Above the block is the circle or group of blocks, generally about twenty. This figure again is a standard, not a Medo-Persic law. Circles were grouped into charges and at this stage the census system and the ordinary administrative chain usually coincided. Above the charge the coincidence was complete, for no charge could lie in more than one taluk or partly in a taluk and partly in a municipality. Supervisors and charge superintendents were as a rule officials. The supply was not always adequate however and non-officials worked in both capacities, in many cases extremely well. One or two gentlemen for example got the schedule headings printed at their own expense for their enumerators so that the preliminary enumeration, which is done on rough paper, might be facilitated.

The Revenue Department furnished the bulk of the supervisor and charge superintendent personnel. Other departments were impressed and used in the directions most appropriate. Thus forest officers were in charge of the enumeration of the Chenchus, Todas and similar tribes, police did the tramps and street-dwellers, port staff attended to boatmen, ship passengers and the like, jail officers did convicts, those in charge of hospitals or asylums the inmates and so on, while the chairman of each municipality was ordinarily at the head of its census hierarchy. Claims for exemption were not infrequent. Here a sharp distinction was drawn between particular and general exemptions. The former were considered each on its merits, the latter opposed as contrary to the principle of common effort which is so important in an Indian census.

One thousand eight hundred and ten charge superintendents, 19,328 supervisors and 370,590 enumerators made up the census army in 1930–31. The great majority were unpaid. Enumerators who had to traverse the Agency or unhealthy areas such as the Attapadi valley were paid. In Madras city it was found not possible to recruit unpaid enumerators for the whole town ; the area of difficulty was North Madras in which few persons of the requisite capacity were resident. This repeated 1921 experience, when also a certain number of the enumerators in the city were paid.

Enumeration. 7. The actual census was taken in the ordinary way. What we seek in a census is an instantaneous photograph of the presidency's population at a chosen moment, from which to tabulate, deduce and prophesy. Practically, for enumerators to fill in about eighteen columns for over 45 million people within the space of a single night is an impossibility. Everywhere, though less in towns than in villages, the bulk of the population at any one moment will be found at a second inspection a month or two later to have altered very little. Hence the two stages of the Indian census, the preliminary and the final. The preliminary enumeration was started immediately after New Year 1931. Towns were fixed to start about three weeks later, though actually many of them began at the same time as the villages. During his preliminary round, the enumerator recorded in rough all details of the persons found within his block. These entries were examined and tested by supervisors and charge superintendents and at the completion of the check the corrected items were entered in the formal enumeration book. The enumerator went round with this book once again on the actual census night. He might find that one or two persons whose details he had written were dead or had left the block ; he might find a child newly born or a recently-come lodger or friend ; if so, he struck out the entries recorded in the first set and enumerated at the end of his book the newcomers in the second set. Compared, however, with the number of entries which remained unchanged, these later changes were very few. Thus he was able to record the actual condition on the night speedily and accurately within the night itself.

Special arrangements. 8. In certain places in the presidency this method could not be carried out in its entirety. Take for example Malabar. Quite apart from the difficult hill tracts which could not be enumerated within a day and which required special treatment, the ordinary plains area of this great district offered peculiar problems. There the absence of formed villages, the difficulty of communications once the roads are left, the frequent occurrence of backwaters, streams and groves of trees, make night-time enumeration apart from the main centres of population inadvisable ; therefore the final census was taken on the morning of 27th February, the details recorded being those of the night preceding ; that is to say, the questions asked would be ' who slept in your house last night ?' and so on. Enumeration of the floating population was however done in the usual way on the 26th night. It is one thing to avoid a night-time enumeration of all the scattered houses in the country ; it is quite a different matter when we come to the floating population found in railway stations, choultries, hotels and so on ; such places are always found at centres of population which lend themselves to night-time enumeration as well in Malabar as elsewhere. Given the early hours at which India is astir, enumeration of the floating population by day is to be avoided if possible.

Other areas where the normal procedure could not be followed were the various hill tracts scattered throughout the presidency from Tinnevelly up to Ganjam. In some of these, e.g., the Arcots, Salem, Coimbatore and South Kanara, all that happened was that the final enumeration was as in Malabar done on the 27th February morning instead of 26th February night. In others the difficulties were greater. In the Agency tracts of Ganjam, Vizagapatam and East Godavari, the Nallamalai Hills, the Laccadive and Amindivi islands and certain hill tracts on the West Coast, the difficulties of communication, the illiteracy of the inhabitants, the absence of persons qualified to act as enumerators, all made it impossible to cover the area within a single night or day. In such cases we give up the attempt to photograph and content ourselves with

a drawing. Synchronization with the general activity of 26th February elsewhere was abandoned and men were sent to traverse these areas at some convenient period approaching the census time to record in the usual form the details of the persons found there. Fortunately, in such areas intervillage or other movement is even less than in the plains and our drawing approaches very closely to photographic record.

The arrangements for the various classes brought under the term ' floating ' population followed those of 1921. The practice introduced then of bringing railway residents or travellers into the ordinary district census was followed. This is strictly logical; a stationmaster who lives hard by his station is in every way as good an inhabitant of the town, taluk or district in which his station is situated as any non-railway person. Large railway colonies, e.g., Bezwada and Trichinopoly, were made separate charges with railway officers in control. Railway enumeration requires particular preliminary care in training and arrangement. The railway enumerator—and indeed for that matter, any enumerator dealing with the floating population—has problems of quite peculiar difficulty; he can never have the benefit of the preliminary enumeration in which the ordinary enumerator is enabled to cut his census teeth, so to speak; his victims are not, as the ordinary enumerator's are, persons well known to him, friends or neighbours, they are total strangers; they are not persons all of whom speak or know his own language, they are not all Madrasis even; the chances are that many will be inclined to distrust a strange interrogator and that practically all will be in a considerable hurry. Thus the dice are loaded against him. In India the railways form a little world by themselves. This world has contacts at certain points with the wider world surrounding but these points are fewer than one would imagine and the attitude of the ordinary railway employee towards non-railway administration is one of detachment. If our stationmaster, ticket-collector, and so on, are to be efficient census officers, it is essential that their superior railway officers, i.e., the hierarchy of their world, give the lead. Hence the importance of continuous liaison in this branch of enumeration.

Provisional totals.

9. The instructions for extracting provisional totals followed those of 1921. The importance of preliminary arrangements, if provisional totals were to be speedily extracted, was stressed. Points that could be arranged beforehand were set out in a circular. The general procedure was that enumerators met at a prearranged spot and each compiled an abstract of the population he had recorded at his final round the night before. From these enumerators' abstracts each supervisor compiled a corresponding abstract for his circle. This went to the taluk office where the tahsildar made up a taluk abstract which he sent to the Collector's office. There similar figures were worked out for the district. Municipalities made out their own abstracts and sent them to the Collector's office; the same applied to cantonments and certain special items of enumeration such as troops on the march. Immediately the district abstract was ready, the Collector wired it to the Census Commissioner and to myself. The first telegram reached me on the 27th of February. That was from Bangalore Civil and Military Station. The second intimation was only an hour or two later, from Madras city. The last reached me on the 3rd of March and the same evening the provisional totals were sent to the Government of Madras and to the Census Commissioner. This expedition gained one day over the previous record. The provisional total differed by ·01 per cent from the total finally determined after abstraction and sorting. If errors in addition and copying committed by Chingleput district alone are left out of account the difference falls to ·005 per cent. Madras city showed the very creditable figure of ·0003 per cent; while of the districts proper, Tanjore and Coimbatore led with ·001 and ·002 per cent respectively, Madura being a good third. Apart from Chingleput, which was fortunately unique, the Tamil districts were superior to the others in accuracy of provisional totals and notably so to the Telugu; only Kistna of the Telugu districts came near the Tamil standard. Another interesting feature was the general tendency for the provisional total to be in excess in the Telugu and in defect in the Tamil areas; moreover all but one

of the three Tamil areas giving a provisional excess lay along the Telugu frontier. Whether this difference could be related to national idiosyncrasy would be an interesting subject for enquiry ; the divergences in general could certainly be related to differences in quality of census work in the districts. It is worthy of note that the provisional totals would have been ready almost a day earlier but for one district which from size, position, communications and homogeneity might have been expected to be among the first rather than a bad last.

Abstraction and compilation.

10. Abstraction and compilation procedure followed 1921. I investigated the possibility of breaking up abstraction and compilation work more than in the past, but times were not favourable and district officers were emphatically against it. I have dealt with this matter at some length in the Administrative Report. For the present, it is sufficient to say that the general scheme of large central offices was followed. Linguistic conditions in the presidency render a certain amount of dispersion inevitable, for Malayalam, Kanarese and Oriya could never be satisfactorily dealt with in Madras. The fragmentation of the Madras-Kanarese area makes location of the Kanarese abstraction office a difficult problem. Much the best solution if central offices are continued in 1941 would be to have it in Bangalore, my original idea for 1931. A departure this year lay in Telugu offices being in the Telugu area instead of in Madras. Telugu schedules were dealt with at Rajahmundry, Bellary and Berhampur. The difficulty in finding buildings reduced the dispersion of Tamil offices to two in Tanjore and one at Tiruvannamalai where the good offices of Raja Sir Annamalai Chettiyar of Chettinad secured me the use, free of rent, of part of a fine chatram. Each office was under a Deputy Superintendent. Their recruitment encountered difficulties gone into at greater length elsewhere. My Deputy Superintendents came from the Revenue Department with one exception, who hailed from Settlement. Each office was organized in sections. There were four of these in the Kanarese office. six in the Malayalam office and ten in the remaining seven. Each section was under a supervisor and had three checkers and about twenty abstractors. The maximum number employed at one time was 1,888.

The slip system was continued. The use of machines was considered too expensive but it seems to me that there are possibilities here which should be carefully considered at the next census. This is dealt with at greater length elsewhere.

Slip copying started first in the Madras office on 12th March 1931. The last office to start was Rajahmundry. Copying was finished completely by 20th June 1931 though some offices had finished much earlier. The earliest opening of sorting in any office was 21st March 1931 and the first tables were sent to the Press on 8th September 1931.

Considerable extra work was imposed upon the Berhampur office and upon myself and my own office by the need for special figures for Ganjam district and the Vizagapatam Agency, the area affected by the possible creation of an Oriya province. I had foreseen a cry for special figures, and abstraction and compilation were done in much more detail and by a much smaller unit for that area than elsewhere. Three elaborate maps with full explanatory notes and statistics were supplied to the Orissa Boundary Committee which visited the presidency in December 1931 and January 1932 and I appeared before it as a witness.

The very adverse financial situation of 1931 affected census operations. Tables were considerably curtailed and work reduced. There were many demands by local bodies for information and statistics but only a few were prepared to pay the cost of the extraction and it was made a rule that no information which the census officers were not bound to give and which involved any appreciable extra time or effort was to be given without payment. This procedure was merely logical, given the strict line of demarcation drawn this time between local and central expenditure.

Cost.

11. The cost of this census (Rs. 6,30,000 in round figures) appears considerably above that of its predecessors. There are several reasons for this. A notable one is the change in debit policy which declared all expense

attributable to the census to be a central charge. It is easier to decide upon and promulgate a change in financial policy, especially when it has superficial attributes of clarity and logic, than to foresee and allow adequately for its effects. So it happened here. The most marked effect was in travelling allowance of enumeration staff. Other changes were that whereas in previous years only the allowances of the superintendent and permanent government servants detached to census duty were debitable to the census budget, all salaries became in 1931 a census charge. The paper used in the preliminary enumeration formerly had always been met from ordinary provincial stocks. This time the census was expected to provide and pay for it. A large debit is for printing work done by the Government Press. This in round figures cost the 1931 census Rs. 55,000; the 1921 enumeration stage printing was done free. As already observed the most marked effect of the change was in the travelling allowance of enumeration staff. At all previous censuses the travelling allowance of local government servants—who form the great bulk of census officers entitled to claim such allowances—entered and remained in the accounts of their departments as a normal charge. This time, following out the theory of separation above indicated, it was held that all travelling on census duty should be paid for from census funds. The alternatives were to leave the audit to district officers and meet the debits they accepted, or to undertake the very considerable work of auditing in my own office all bills for census journeys. The second was adopted, mainly from a desire to secure uniformity of treatment in what was a uniform type of duty; the need for retrenchment made it still more advisable that all bills should be dealt with in the superintendent's office. As a result, 26,000 bills passed through my hands representing an expenditure of Rs. 1,25,000. This was the amount finally passed. The amount claimed was over three lakhs. No such debit appears in preceding censuses. It remained a provincial charge as an ordinary administrative item, its census origin and magnitude not being indicated or traceable.

The system of charging followed in earlier years thus masked a very large expenditure incurred on account of the census operations but embodied in general provincial accounts. Comparison with 1921 and other decades is consequently difficult and if care is not taken will definitely mislead. Rs. 1,50,000 in round figures may be taken as an approximation to the expenditure debited to the 1931 census for which no corresponding debit appears in the accounts of any previous census though the expenditure was incurred.

The 1921 cost was estimated at Rs. 12–1–0 per thousand of population. This was calculated on the departmental account of 5·15 lakhs, deduction being made for recoveries from States, the sale of furniture, and other abatements. The 6·30 lakhs for 1931 contains no such allowance; accounts procedure this year was that no abatement of charges was admitted, all being recorded separately as receipts. The difference in cost between the two censuses is therefore less than the 1·15 lakhs obtained by subtracting the figures. If the 1·5 lakhs debited to the census in 1931, to which no corresponding debit was made in previous censuses, is taken into account it becomes clear that the 1931 census has actually been less expensive than its predecessor. The cost per thousand is Rs. 13–6–0 on the gross figure and Rs. 9–5–0 on the figure comparable with those for previous censuses. A reduction in cost by nearly 25 per cent is a satisfactory achievement. The census cost per thousand is a creditably low figure which illustrates characteristic Madras economy. The 1921 English census cost £9–5–6 per thousand. This figure, however, excludes such considerable items of expense as printing, stationery, maps, cards and hire of machines, and it can safely be said that a figure including those items would run well over £10 and 15 times the 1931 Madras figure.

12. The position in 1931 was that the census was taken at cost of the central government by an agency over which it had no real control. From one point of view the allocation of every census debit to a central head is attractive because logical. Life however and logic rarely coincide at all points and the census is one of them. Every provincial government makes constant

use of the village statistics, in some ways the most valuable of all census products from a purely administrative point of view, and to a less extent of other census tables. One municipal chairman said to me ' if you were not going to take a census this year, we should have to take one ourselves '. That being so, the rightness of a complete allocation of census costs to the Central Government account is open to question.

A fair and workable division would be for the local government to bear the cost of enumeration and for the central government to be responsible for all costs involved in tabulation. Another anomalous application of the black and white principle was that village statistics were held to be not a central concern and therefore extraction should be paid for by the local Government. Given the theory above indicated and its application to the detriment of central funds in larger cases, the attribution of village statistics work as a provincial charge could not be contested. It is however an incident in normal tabulation and under a more reasonable system of debit would remain so. The suggestion was made that the preparation of these statistics should be handed over to the local government. I opposed this and with the support of the local government secured the continuance of the preparation of these statistics by census agency.

13. It is difficult to assess the debt which the census owes to officers of Government and other citizens. Districts varied greatly in the quality of their census work and it was not those with the greatest administrative or political preoccupations which gave the least attention to census matters. Municipalities varied even more ; where a chairman was energetic and interested and had a good control of his municipality the work reached a very high standard indeed. Where these conditions did not obtain, the standard fell far below that of an ordinary village and the poorest enumeration work I came across was from one of the ' Cities ' of the Circars. A census at any time means a definite addition to work. That this should be done almost entirely by unpaid agency is greatly to India's credit and it is important to encourage the general realization that everyone is expected to help to the best of his ability. Hence a strong argument for making all Government officers liable to performance of census duty and eschewing general exemptions.

De jure system proposed.

The Madras census army on the move on 26th February 1931 was on the way to half a million strong. This single fact indicates the dimensions of the organization required to deal with the census on a *de facto* basis. In my opinion the time has come to depart from this mode of taking an Indian or at least a Madras census. The *de facto* system is attractive in theory but as with most theories experience brings qualifications. The system of the trained enumerator as against the household schedule must prevail in India for some time to come if only on account of the illiteracy or widely varying literacy encountered. The system is on its own merits preferable to that of the household schedule. Instead of as many idiosyncrasies as there are householders, we have only the personal errors of a comparatively small number of enumerators and by careful training these personal errors are reduced and a more uniform approach to enumeration achieved. This in itself is a matter of the highest importance in collecting original social data. The United States uses enumerators on more or less the Indian fashion but does not attempt a *de facto* simultaneous enumeration and in essence the Indian census itself recognizes the impossibility by adopting the preliminary enumeration which is its real key point. In a country of great distances, varying communications and peoples it is unwise to sacrifice unduly to a theoretical uniformity. If proper use were made of the revenue and village staffs who form the backbone of Madras administration and a time coincident with less pressure of other work were chosen, the Madras census could be carried out on a *de jure* basis with, except in the larger towns, no outside assistance beyond a schoolmaster in heavy villages or a few paid enumerators in the agency or other difficult tracts. So far as Madras is concerned therefore I recommend that serious consideration be given at the next census to the possibility of (*a*) adopting a *de jure* enumeration basis, (*b*) carrying this out through village officers with the supervision of the ordinary revenue staff, special arrangements being made for unhealthy or difficult areas,

(*c*) choosing a time more suited to the revenue administration. The late cold weather finds every Madras village officer and revenue subordinate up to the ears in land revenue collection and there is a physical limit to the amount of other work that can be demanded at that season. Hence so long as this date is adhered to, a considerable extra provision of enumerators is practically essential. If some date about September were chosen, the village officers could themselves with little extra assistance carry out in the course of a month a thorough enumeration of the normal population of their villages. Even if the present inconvenient date is adhered to, the census could be carried out on a *de jure* basis but a longer time would be required and supervision could not be so thorough. If the village agency were fully employed at a convenient census time the same agency could be used in the first stages of sorting and thus local knowledge would be automatically enlisted at the stages of tabulation at which it is most important.

Public attitude.

14. The political preoccupations caused by the various movements which formed the phases of the 1930–31 Civil Disobedience campaign lay heavily upon officers responsible for the peace and government of the country. From every point of view the census offers a promising field for civil disobedience activities. While the existence of these movements and these preoccupations enforced renunciation of contemplated census experiments, the Madras public's general attitude reflected a practical outlook. Census boycott had never any real chance in the districts. There were suggestions of it in Malabar and the more temperamental Telugu seemed at one time likely to succumb and a few prosecutions under the Census Act were necessary, but on the whole the commonsense for which South India is acquiring a deserved reputation was prominent. Regarded from any point of view the boycott of a census is a ridiculous gesture and it is pleasant to think that the difficult cases encountered, e.g., in Madras city, were not Madras Presidency men but hailed from areas in Upper India, notably Gujerat in which the bulk of Indian agitation and unrest of recent years has had its source. I traversed the entire presidency twice by car, rail, horse, foot and boat and held meetings in a variety of surroundings ranging from mango trees by the roadside to the shadow of the great Srirangam temple on Main Street under the light of a young moon. I was questioned in many languages and received often shrewd, useful comments and suggestions and the enlightenment on how a census schedule strikes the ordinary man was profound. Hence my suggestion that the enumeration schedule should be published in draft at least six months before the final decision on its form is taken.

Acknowledgments.

15. The census abstraction offices had difficulties of their own to contend with. There must always be a divergence of interest between temporary men recruited for the disposal of a task within the quickest time and the officers responsible for completing that task. A trial of strength was possibly inevitable and in four of my nine offices it occurred in the form of a strike. This failed in every case. The headship of an abstraction office is one calling for considerable qualities of moral courage, discipline and intelligence but these officers, only one of whom had previous experience of census, assimilated what was required and bent their energies to carrying out the work entrusted to them. Problems varied in the different areas and the test of a good officer was how quickly he was able to detect and appraise these problems and then to meet them. Mr. Srinivasavarada Ayyangar till August 1931 and after him Mr. Vrishabha Das were in charge of compilation. Both officers displayed industry, ability and keenness. Mr. Vrishabha Das had to deal with a ca'canny movement and strike in the compilation office, but prevailed over all anxieties.

Khan Sahib Moinuddin Khan Sahib Bahadur.
M.R.Ry. R. Srinivasavarada Ayyangar Avargal.
,, T. V. Ramunni Nayar Avargal.
,, P. V. Chelapathi Mudaliyar Avargal.
,, S. Narayanaswami Nayudu Garu.
,, M. C. George Avargal.
,, V. K. Sundaresha Sastri Avargal.
,, S. Vrishabha Das Avargal.
,, T. K. Gopala Ayyar Avargal.

In my own office I received steady and valuable collaboration from Mr. Subrahmanya Pillai and those under him. A link with Madras censuses since 1901 was the presence in my office of D. Natarajan, a son of Rao Sahib S. Dandapani Aiyar; he worthily upheld the family tradition.

The Government Press, Madras, I found a constant stand-by. The quality of the work was invariably good and always I found them obliging and prompt. I owe a great deal to Mr. Green, the Superintendent, and to Mr. Lepper, for constant interest and helpfulness. In 1930 six million schedules had to be printed in six languages, not to mention 40 million odd slips and other details of printing, and this coincided with an election and the burst of printing work it occasioned. Another unfortunate coincidence was that of devastating flood damage on the South Indian Railway which hampered despatch of schedule books to the south.

It will be observed how well the Press has responded to my desire to abolish lines in the tables. This departure lends both grace and clearness to tabulated figures and has been carried out wherever possible and extended to the village statistics.

I had much to do with the Madras Survey Department. The original intention was that all maps should be prepared in a Government of India office but such was the quality of the work of the Madras Survey office that an exception was made in the case of this presidency. Particular efforts were made to improve the maps and diagrams in the report and in the process I must have given a good deal of trouble to the Survey officers. I am greatly indebted to their constant interest and efforts to carry out my desires, even though this involved in some cases (e.g., by having every place name horizontal) departure from cherished survey tradition. All unnecessary detail was excised but all genuinely illustrative matter inserted. A notable illustration of the changes and of the quality of the collaboration of the Survey Department will be found in the key map. I owe a particular debt to Mr. Narasimha Acharya under whose superintendence the census maps were prepared. The special maps required by the Orissa Boundary Committee were of particular intricacy and gave us many hours of experiment before the final form was reached.

CHAPTER I.

DISTRIBUTION AND MOVEMENT OF THE POPULATION.

The Madras Presidency. THE presidency of Madras with which this report deals is peculiar in shape as in physical constitution. It is one of the most polyglot of India's great administrative divisions, for apart from English no fewer than five highly developed languages, each with its own character, literature and traditions, have to be used in its administration. Its true geographical centre is Bangalore in Mysore State. With that state this report has no concern as Mysore conducts its own census and publishes its own results as part of the Indian series. The same applies to Travancore and Cochin States. Pudukkottai State also took its own census but under my general supervision and is publishing its own report. This, however, will not form part of the Indian series and the figures for Pudukkottai appear therefore in this report along with those for the two smaller states of Banganapalle and Sandur.

Changes in area. 2. The decade saw no change in the provincial boundaries. Two internal changes of some importance have already been referred to, namely, the re-absorption of the Agency division, formed in 1921, in the three northern districts on the East Coast and the formation in 1925 from the old Kistna district of two districts, Kistna and West Godavari. Changes have occurred in the boundaries of Chittoor, North Arcot, Coimbatore and Salem. These reflect the transfer to Chittoor of the Kuppam and to Salem of the Mettur areas. The figures in the margin illustrate the transfer and its range. Any comparison of present with previous census figures for the two districts must take account of this transfer.

	Area transferred.	Population.
North Arcot to Chittoor.	305 sq. miles.	53,507
Coimbatore to Salem.	137 sq. miles.	23,765

In order to facilitate comparison with 1921, figures for Ganjam, Vizagapatam and East Godavari in the Imperial Tables have invariably been broken up into Agency and Plains. The Imperial Tables for 1921 clubbed all Agency tracts together. In the subsidiary tables the Agency is retained as a natural division and 1931 and 1921 are on the same lines. To effect a comparison with the 1921 Kistna, its two successor districts must be added. Provincial Table I gives certain detail by taluks which will assist comparison.

Minor changes have taken place in the boundaries of taluks or other units below the district. Several cities have extended their boundaries, among them Madras. Usually, as in the case of the presidency town, the added area brought practically no fresh population with it but in some cases, e.g., Tuticorin, the population accretion was considerable. An occasional town has contracted, e.g., Palghat, but the prevailing tendency is pronouncedly in the other direction.

Natural divisions. 3. The grouping by natural divisions observed in 1921 is retained for the 1931 figures since instructions were that only for good reasons should it be varied. 'Convenient' would be a more applicable adjective, for while the convenience of the division is obvious, its 'naturalness' is subject to some qualification. To achieve a closer approximation would involve going within the district boundary and having regard to the need for easy comparison with previous censuses an alteration of the 1921 arrangement was not justified. No particular stress should however be given to the word 'natural' in considering these groupings which should be regarded only as broad and convenient generalizations.

The divisions were described in 1921 and only brief comments will be given here. The first comprises the Agency tracts, so-called because they come within the Scheduled Districts Act and are administered on special lines through officers styled Agents to the Governor. They are essentially that part of the Eastern Ghats within the presidency north of the Godavari. The birth of the Agency Division in 1921 reflected the consciousness that these backward tracts were in essence a single social problem, its early demise the realization that their administration was bound up with the plains areas they adjoined. The tract is far from homogeneous in composition or population. It includes areas such as Naurangpur, most of Jeypore and some of Malkanagiri, which are practically indistinguishable from the Central Provinces. Two taluks along the Godavari river were in fact part of that province till early this century and were added to Madras only because they were more easily accessible by river from the circars coast. The area though heavily forested over much of its extent is by no means so entirely jungle as the 1921 description would imply ; there are areas, e.g., in Udayagiri, Jeypore and Koraput taluks, where it would be difficult to find jungle which could not be bettered in many a plains taluk. The East Coast North division as a natural unit should stop with the Kistna delta, for the inland taluks of Guntur have more in common with Hyderabad and the Deccan than with the Coromandel coast. In this division occurs one of the most marked linguistic frontiers in the presidency. The four delta districts further differ in many ways from the two coastal districts to the north. Although these lie more north than east of the Godavaris and Kistna their inhabitants are always known as 'East men' (తూర్పువారు) while in the Telugu tracts of Vizagapatam and Ganjam, the inhabitants of the deltas are known as 'West men' (పడమటివారు). It is interesting to observe that this exchange of terms does not extend to the Oriya tracts of Ganjam. Nellore south of the Pennar would be more fittingly attached to the East Coast Central division while the remainder of it is really a no man's land possessing a good deal in common with the Deccan over the ghats behind it. Colonel Russell, I.M.S., informs me that when making his cholera investigations he decided that Nellore could not possibly be joined with the Circar districts, so different was it in essential conditions. He therefore treated it along with the central area covering Chingleput and the Arcots. Similarly, Chittoor district is a transition belt between the Deccan and the East Coast Central division. The last-named division covers regions of wide variety. It includes South Arcot district of which the southern taluks have more in common with Tanjore than with their own district. The West Coast is the most obvious and natural division of all.

In any discussion of natural divisions affecting Madras presidency it should be remembered that the natural association of a number of boundary fragments is not with the presidency at all but with the adjoining provinces or states. This is notably so in the districts bordering Mysore.

Reference to statistics.

4. Imperial Table I gives the area and population of each district and state. Provincial Table I gives the same information by taluks while the subsidiary tables at the end of this chapter display various information of census or other origin bearing upon density and movement of the population.

Enumeration.

5. The Indian census is essentially on a *de facto* basis and the figures of population therefore represent the persons actually present in the particular areas on the night of 26th/27th February 1931. The victim of a motor accident detained in the General Hospital, Madras, over that night would swell the city's population though his home might be Vellore ; a B.I. boat in the harbour would contribute similarly, though not a man on board might have any connection with the city or the presidency ; a Ramnad policeman in Trivandrum on escort duty would enter the Travancore population ; and so on. Salem, Vellore and other towns housing big Central Jails will always gain from that fact a greater variety of population while should any town or village chance to be celebrating a popular festival on census night its census figures would show a remarkable variation from its normal. Always a census date is fixed to shun the larger festival aggregations ; in 1921 the original date was altered when the Madras Government pointed out that it coincided with a 12-yearly festival due

to bring half a million people to Kumbakonam. It is not possible to steer absolutely clear of smaller local celebrations. These draw their attendance from a restricted area, however, and as far as possible the ordinary rules were applied, i.e., only those who could not have left or returned to their homes during the census night were recorded under the village housing the festival instead of under their hometown. The same principle governed the cases of night workers. Doubtful cases will always occur where travellers are concerned. In the true bureaucratic state all movement would be stopped on census night under heavy penalty. India being far from that ideal, general principles have to be laid down for doubtful cases. Enumerators were told that where a traveller pleaded prior enumeration they should satisfy themselves by questioning him that this prior record would in all probability be retained. Unless they were so satisfied they should enumerate him. All persons enumerated as travellers were given a ticket to ward off later attempts at enumeration, but cases occur of persons reckoned as within their homes on census night starting a journey on that night. Such will have no ticket. Commonsense and a realization of the principle behind every census, viz., 'catch every person once and only once', are the best equipment for such cases.

Madras is a presidency where the urban element, though stronger than in most Indian provinces, is nevertheless weak, only one-eighth of the total population. The rural enumerator is dealing with persons he has known for long and the inhabitants of his block are little given to change. It is difficult indeed for even the wiliest stranger to enter much less remain in a village unperceived. Over the great bulk of the presidency the chances of anyone escaping enumeration are small in the extreme. In the non-synchronous areas described in the introduction the scope for variation may be slightly greater but it must be remembered that in these areas movement is usually less than in the plains and more restricted. The Madras town (and the presidency town is no exception) retains many of the characteristics of the village from which it sprang and the closeness of enumeration suffers little diminution. The principle of preliminary and final enumeration adds something to the labour but also to the accuracy of the count. What error there is is more likely to be plus than minus but in any case I would put 1 in 1,000 as an absolute maximum with a probability that it is much less.

A census should seek the normal and it may be argued that the simultaneous census with its separate enumeration of travellers departs from the normal to the extent of such enumeration. From this theory spring the attempts to derive the 'natural' population, with every one allotted to his normal residence. One might equally well argue that this 'natural' population suffers from unreality in that it disregards the fact that the normal for any night of any year anywhere is for a considerable number of people to be absent from their homes. The simultaneous census recognizes this and the facts it records illustrate the strength of the travelling element and the degree of movement. So far as the European population is concerned the cold weather could with some reason be objected to as not normal. Steamship figures up to Christmas show an enormous preponderance of arrivals in India ; from March to May the preponderance outwards is equally marked as the hostages to fortune stream homewards and the globe-trotters seek other lands. A census date in February-March must bring within India's population many birds of passage. From one point of view these are normal inasmuch as they are a recurring feature of every cold weather like the swallows of an English summer and their numbers are a matter of interest. It would be better if in future censuses an attempt were made to differentiate between those with some form of domicile in India and those without. Another point which calls for attention is that many people, particularly Europeans, must under the present system be censused both in India and in England, not to mention other European countries. A February census in India and an April census in Britain means that many persons must contribute to the population of both. This was noticeable in Madras and must be more common still in North India. With a cold weather census date for India duplication of this sort is inevitable and is likely to increase as communications grow more speedy. The only means of preventing this would

be to have the two census dates much closer together. Theoretically every census should refer to the same date. Like most ideals this fails before the practical objections of convenience, but consideration should be had in 1941 to the possibility of lessening the interval between the British and the Indian census.

The total population recorded as travellers of various kinds (see the last column of Imperial Table III) is 73,121. This means that 1 in 645 of the population was absent from his home on census night. Some of this represented festival aggregations. Much of Coimbatore's 8,194, North Arcot's 5,795 or Malabar's 5,590 quota is referable to this cause. The persons attracted to these festivals are almost entirely of presidency origin and the vast majority come either from the district or adjoining districts. The same applies to the 6,000 odd strangers returned from West Godavari where the sweet toddy season was on at census time. The figure of 73,121 travellers connotes probably not 1 in 1,000 alien to the presidency, and the census figures may be taken as giving a close approach to the normal. Besides, a definite degree of dispersion at festivals should be taken to be one of the continuing features of Indian life and all such continuing features should find reflection in the census figures which profess to illustrate that life.

Area and population compared with other provinces.

6. The areas in Table I are the most recent determinations of the Survey department. The Madras presidency proper, excluding that is, the states embedded in it, covers 142,300 square miles and is second in area among the great administrative divisions of British India, Burma being first with 234,000, Bombay third with 123,600, the United Provinces fourth with 106,300 and Bengal eighth with 77,500. The population order is different however and almost reversed: Bengal, the smallest province but one, is first with 50·1 millions, followed closely by the United Provinces with 48·4 millions, Madras being third with 46·7 millions while Burma's great expanse shelters but 14·7 millions. If the States associated with the provinces are added the above rankings would be affected. Bombay, e.g., would become second in area and both the Punjab and the Central Provinces would go in front of the United Provinces. The population rankings however would not be altered.

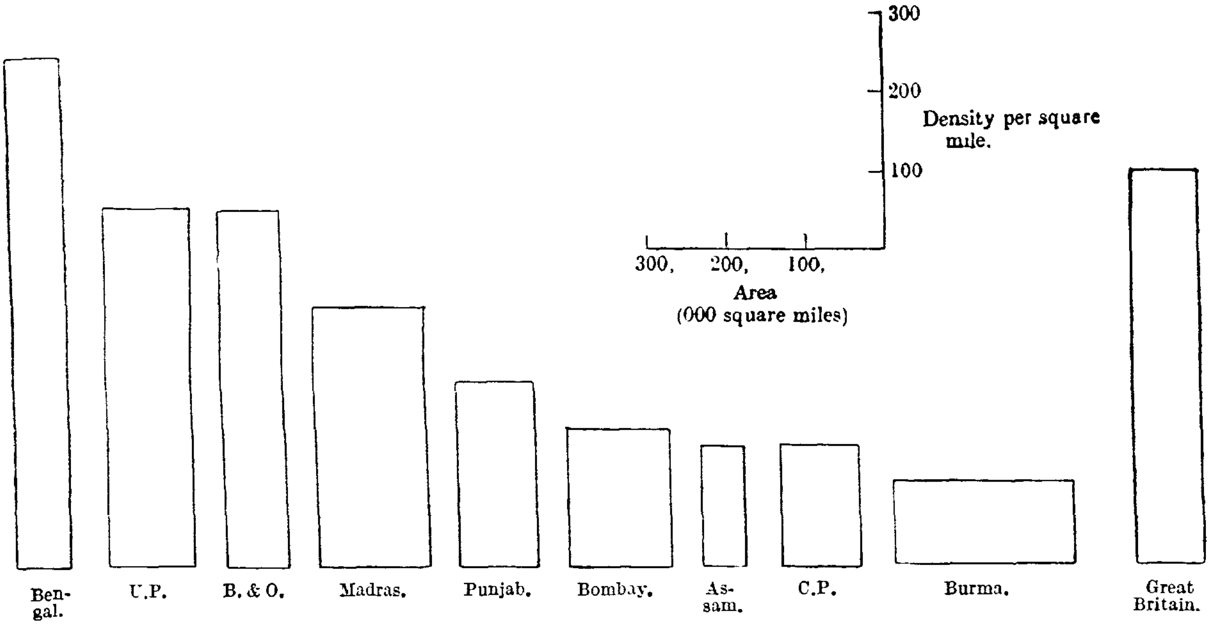
The table below gives a comparative statement for area, population and density for the principal units of British India and similar figures for Great Britain and some other countries. Where as in the case of France the last census was some distance of time from 1931 an estimate of the present population has been made and the figure rounded. Densities in such cases have also been rounded. In the case of Persia figures for both area and population are estimates.

Province (British territory) or country.	Area (000 sq.m.)	Rank by area.	Population (millions).	Rank by population.	Density per sq. mile.	Rank by density.
Burma	233·7	1	14·67	8	63	9
MADRAS	142·3	2	46·74	3	329	4
Bombay (excluding Aden) ..	123·6	3	21·80	6	176	6
United Provinces	106·3	4	48·41	2	455	2
Central Provinces and Berar.	99·9	5	15·51	7	155	8
Punjab	99·0	6	23·58	5	238	5
Bihar and Orissa	83·05	7	37·68	4	454	3
Bengal	77·5	8	50·11	1	646	1
Assam	55·0	9	8·62	9	157	7
Belgium	11·7	..	8·13	..	692	..
England and Wales	58·3	..	39·95	..	685	..
Great Britain	88·7	..	44·89	..	505	..
Prussia	113·8	..	39·30	..	345	..
Italy	119·7	..	42·16	..	352	..
Poland	150·0	..	31·9	..	210	..
Sweden	173·1	..	6·10	..	35	..
France	212·9	..	41·0	..	195	..
Japan	260·8	..	85·10	..	330	..
Persia	628·0	..	10·0	..	20	..

Diagram 1 illustrates these figures for the provinces and Great Britain.

Diagram 1.

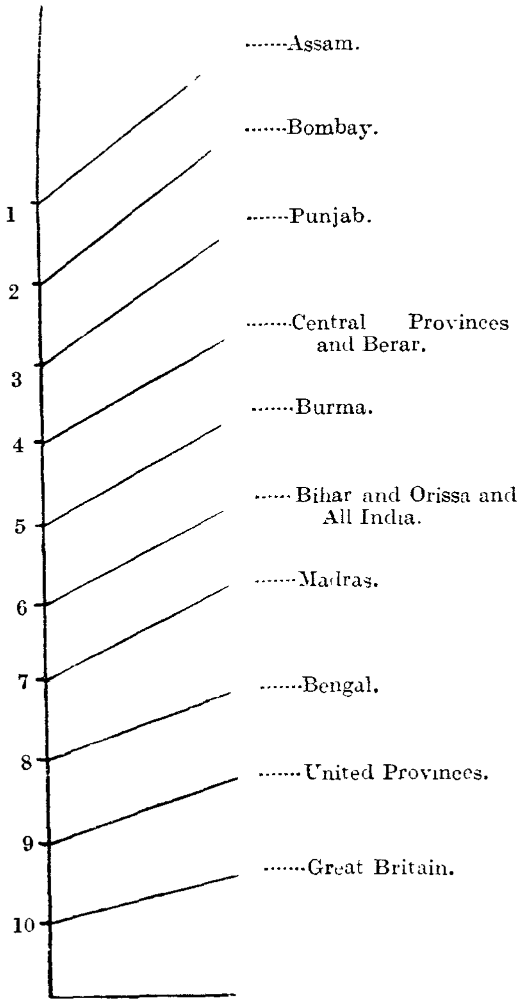
Provinces in order of density on bases proportional to area.
Rectangle areas ∴ ∝ total population.



The Indian figures are further put in order of magnitude under each of these three heads. Madras descends one step as we pass from area to population and from population to density. In density it occupies a well-marked middle position between the closely packed Ganges valley and the more sparsely furnished north-west and west. In area it is comparable with Bombay but its parallel in population is to be sought in the much smaller United Provinces. Poland approximates closely in area to the Madras Presidency but falls far behind it in population. Japan produces almost the same density but the parallel is not of great value. The figures of area for Japan include all the islands, several hundreds in number, while the population figure is confined to the greater ones. The effective Japanese density is probably much greater than the 330 here shown. It will be observed that only the strongly industrialized countries of the west exceed Madras in density of population and that the presidency now holds more persons than Great Britain, the small lead of the latter in 1921 having been converted into a Madras lead of nearly 2 millions.

Diagram 2.

Rates of Increase, 1921-31.



7. The order of the provinces as regards population is unchanged from 1921 but the lead of Bengal and the United Provinces over Madras has lessened as a result of Madras' larger rate of increase. While Bengal increased by 7·3 per cent and the United Provinces by 6·7, Madras recorded 10·4 per cent. Bombay and the Punjab exceeded considerably, Burma and the Central Provinces slightly, the Madras rate. Bihar and Orissa

was almost the same. Diagram 2 illustrates the differing rates of growth. The curves fall into three groups—

(1) Above the average rate for India.
(2) Close to it.
(3) Below it.

Observe the flatness of the line for Great Britain.

Diagram 3.

Growth of Population, 1871–1931, *for provinces and Great Britain.*

Diagram 3 shows the progress in population of the Indian provinces and Great Britain from 1871. The Great Britain curve is much smoother than that for any of the provinces except Assam. The falling off after 1911 is well illustrated. Of the Indian provincial curves that for Assam is least accidented. All the curves for India illustrate well the difference between the increase in the last decade and the effects of the less fortunate ten years between 1911 and 1921. Bengal's steady overhauling of the United Provinces is a notable feature as also is Madras' recapture of the lead from Great Britain and the progressive diminution of the interval between it and the United Provinces. Sixty years ago the United Provinces had 10 million more inhabitants than Madras ; now its lead is less than 2 and if recent rates of increase continue the two will be equal about 1943. Madras and Great Britain have been equal in population twice, in 1916 and 1924. Madras began the sixty years only 3 millions below Bengal ; the effects of the famine decade 1871–81 increased Bengal's lead to 5½ and Madras' great recovery reduced it again to 3½ in 1891. In the following years the gap increased very gradually to 4⅓ millions. The almost parallelism of the curves in this period shows the close approximation of the rates of change.

8. The Madras district, like the administration of which it is the unit, differs in many ways from its parallel in other provinces. This is so in area. The largest district, Vizagapatam, with 17,000 square miles is more than half the size of Scotland. None of the greater provinces can produce any district so extensive though Baluchistan has one district of over 20,000 square miles with a population of only 24,000 and a density of 1. Nineteen other districts out of the twenty-six are above 4,000 square miles in extent, half the size of

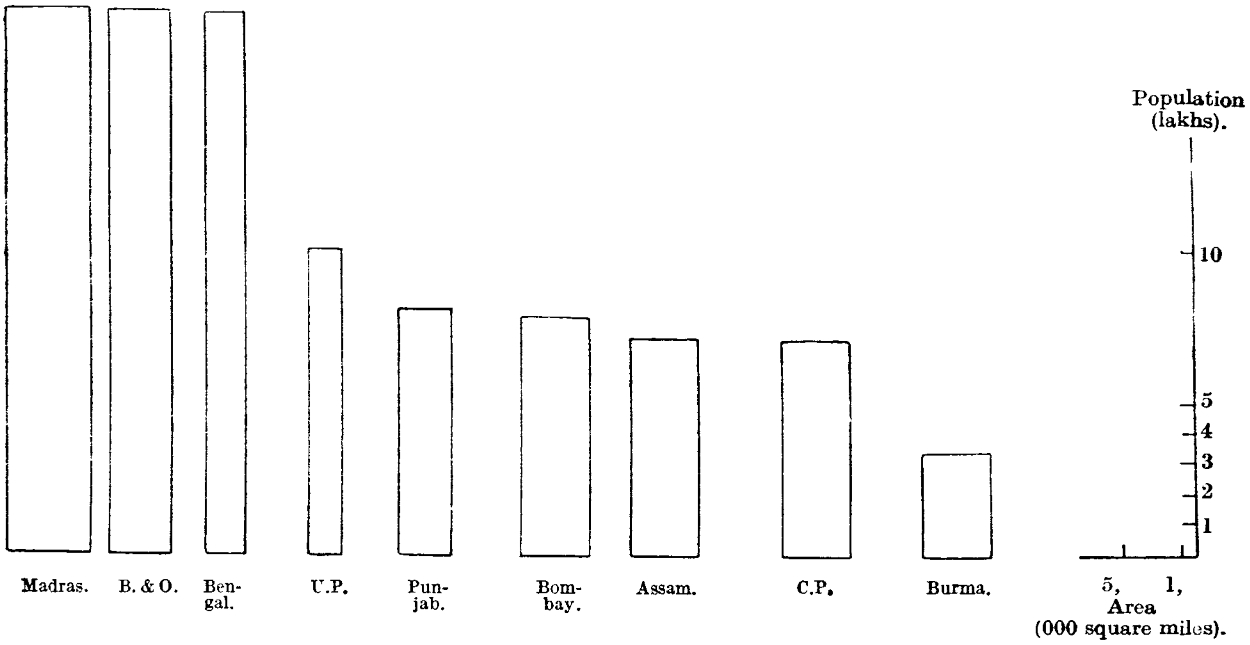
Wales. Of these 19, one is above 8,000, four are between 7,000 and 8,000 and seven between 5,000 and 7,000 square miles. When these figures are compared with those for other provinces as exhibited in the table the much greater size of a Madras district is immediately apparent. Only Burma and the Central Provinces come within 1,000 square miles of the Madras average. These competitors fall far behind however when district population is considered. Here a sharp division exists between Bengal, Bihar and Orissa and Madras on the one hand, and the remaining provinces on the other. Madras has now the greatest average district population with 1,797,696. Bihar and Orissa is second with 1,794,170 and Bengal third with 1,789,786. Next, but far behind, come the United Provinces with 1,008,516 and then the Punjab, Bombay and the Central Provinces in the 700's. Burma's emptiness is once more illustrated by an average district population of only 344,791.

Diagram 4.

Average District by population and area.

Base ∝ average district area.

Height ∝ average district population.



Province.	Most populous district.		Average district population.	Largest district (sq. miles).		Average district (sq.miles).
1. Madras	3,607,948	Vizagapatam	1,797,696	17,186	Vizagapatam	5,472
2. Bihar & Orissa	3,166,094	Darbhanga	1,794,170	7,102	Ranchi	3,955
3. Bengal	5,130,261	Mymensingh	1,789,786	6,237	Mymensingh	2,769
4. United Provinces	3,567,561	Gorakhpur	1,008,516	5,412	Garhwal	2,213
5. Punjab	1,378,570	Lahore	786,028	9,620	Kangra	3,415
6. Bombay	1,302,527	Ratnagiri	778,692	13,636	Thar-Parkar	4,414
7. Assam	2,724,342	Sylhet	713,647*	8,092	Lushai Hills	4,271
8. Central Provinces	1,527,573	Raipur	704,896	9,717	Raipur	4,542
9. Burma	637,580	Akyab	344,791	16,037	Upper Chinduru	4,549

*Excluding Frontier tracts.

Mymensingh in Bengal retains the honour of being the most populous district in India and with over 5 million inhabitants it well merits the honour. Madras can now claim the second place however, for Vizagapatam with 3,607,948 comes before Gorakhpur in the United Provinces. Malabar occupies the fourth position with 3,533,914. The small table above sets forth in compact form the main figures for each presidency as regards district averages and maxima. Another point illustrating the difference in district units over India is that in Madras 11 districts out of 26 have over 2 million people within their borders, in Bihar and Orissa 10 out of 21 and in Bengal 8 out of 28. In the United Provinces only 2 out of 48 and in Assam 1 out of 12 reach this figure. The other provinces cannot raise a district with more than 2 million persons. Bombay has none that even reaches 1½ millions and less than a third of its districts are over a million.

A few comparisons will illustrate the dimensions of the larger Madras units. Vizagapatam district is almost equal in area to Berar, is considerably larger than Orissa and is larger than Baroda and Travancore States put together. Of

European countries, Switzerland is smaller than Vizagapatam and Holland and Belgium considerably so. Both Vizagapatam and Malabar contain a greater population than Gwalior State, Berar, Baroda State or the North-West Frontier Province (administered areas) and are only slightly below Sind and Jammu-Kashmir State.

Distribution by natural divisions.

9. The recorded population was 47,193,602 including the three States, 46,740,107 for British territory alone. These represent increases of 10·3 and 10·4 per cent respectively over 1921, a rate of growth which has not been equalled since 1881–91 when recovery from the great famine found illustration in a 15·7 per cent rise in population. The contributions of the various natural divisions are shown below :—

	Population.	Per cent of total.	Per cent increase.
1. Agency	1,763,765	3·7	16·5
2. East Coast North.	12,175,530	25·8	12·2
3. Deccan	4,047,344	8·6	10·3
4. East Coast Central.	13,349,980	28·3	11·3
5. East Coast South.	10,774,702	22·8	4·7
6. West Coast ..	5,082,281	10·8	13·5

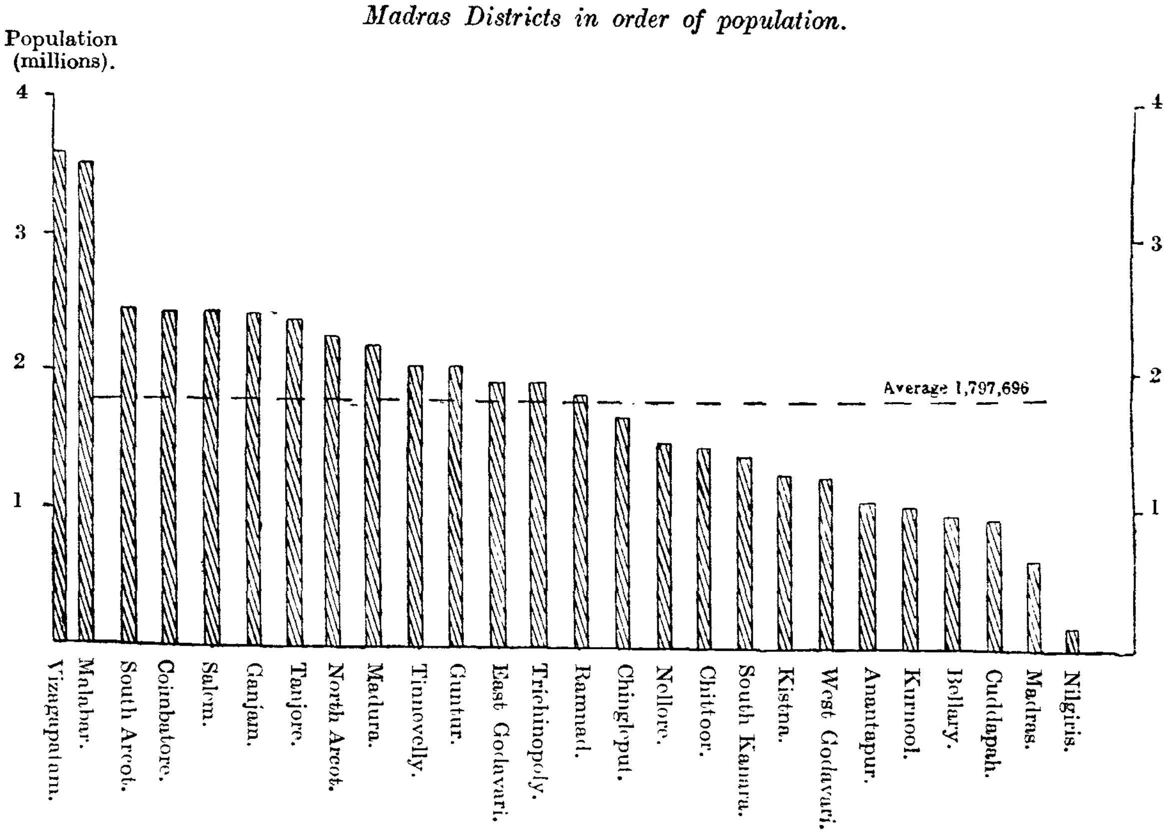
A comparison with 1921 shows the Deccan contribution percentage as identical, that of the East Coast South as over 2 per cent down, and all the others as slightly increased, East Coast North more than the others. This reflects the much lower rate of increase in the southern Tamil districts. The Deccan increased at exactly the presidency rate, the Agency far above it, the West Coast considerably and the East Coast Central slightly above, while the East Coast South is far below. The East Coast North rise is much more marked in the Godavari-Kistna delta than elsewhere.

Districts—population.

10. In 1931 as in 1921 Vizagapatam and Malabar head the list of districts but Tanjore is no longer No. 3 ; it has now sunk to seventh, South Arcot, Coimbatore, Salem and Ganjam having gone above it. Guntur and East Godavari have gained a step, while Trichinopoly has lost two and Ramnad and Cuddapah one. Diagram 5 shows the various district contributions. The districts have been put in order of population. The average district population is shown by a dotted line. Of the fourteen districts which exceed this average nine are Tamil. Vizagapatam's enormous area (over twice the size of Wales) make it not really a representative district and the same to some extent applies to Ganjam. The plains portion of each, however, yields a population above that of the average district. The density diagram 7 affords a useful corrective.

Diagram 5.

Madras Districts in order of population.



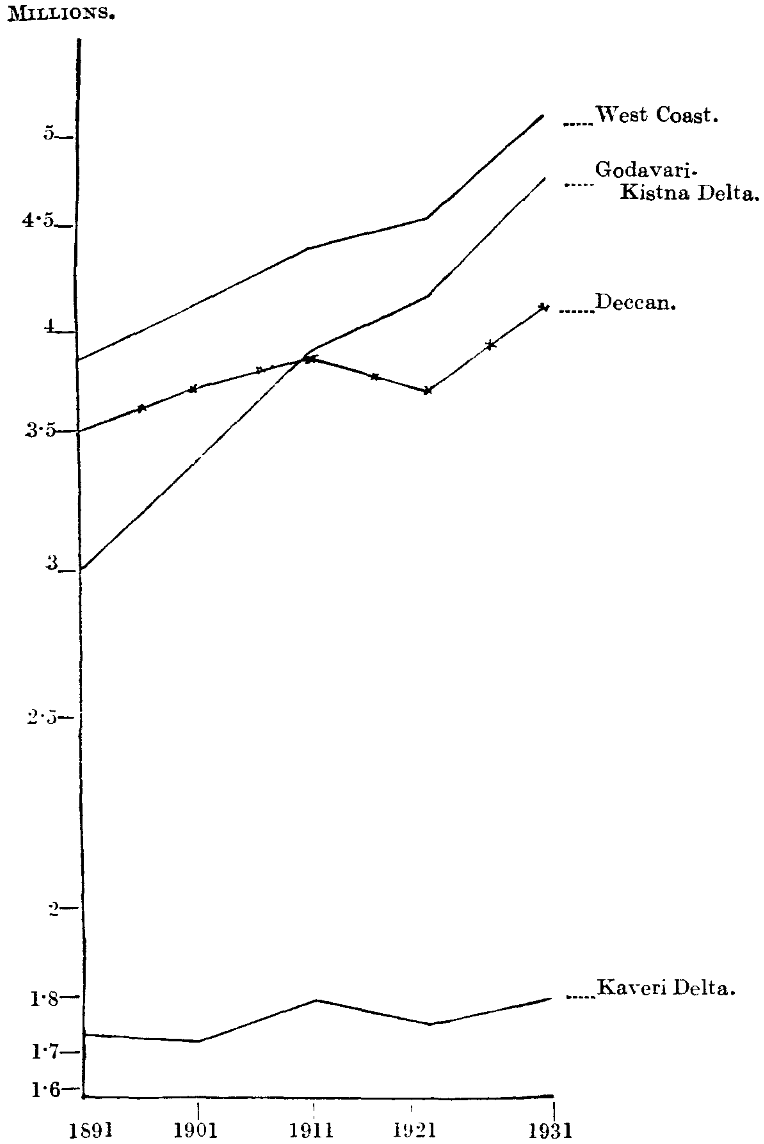
11. Over the five censuses covered by Imperial Table II the province showed an increase in population of 30·9 per cent. This would give a period average of 7·7. No change in the presidency area took place during these forty years and the system of enumeration though it probably improved slightly in closeness at each census cannot be said to have developed so markedly as to have a measurable effect on comparative fullness of enumeration.

The increase was not even, though for the first two decades it came very near the average rate above mentioned. The population curve shows a marked flattening between 1911 and 1921. This represents mainly the effects of the influenza pandemic of 1918 which visited Madras with great severity. Its effects covered the whole presidency but were particularly notable in the Deccan and the Agencies. All three Agency tracts and seven plains districts showed an actual diminution in population as did the States of Banganapalle and Sandur. Of these plains districts 4 were in the Deccan, 1 in the extreme north (Ganjam), and the others South Arcot and Tanjore. Bellary district had in 1931 gained only 300 in population over 1911. Sandur State has only 50 persons more than 1911 while Banganapalle has yet to re-achieve its 1911 total. In the decade 1911–21 the population of Bellary went down by no less than 11 per cent.

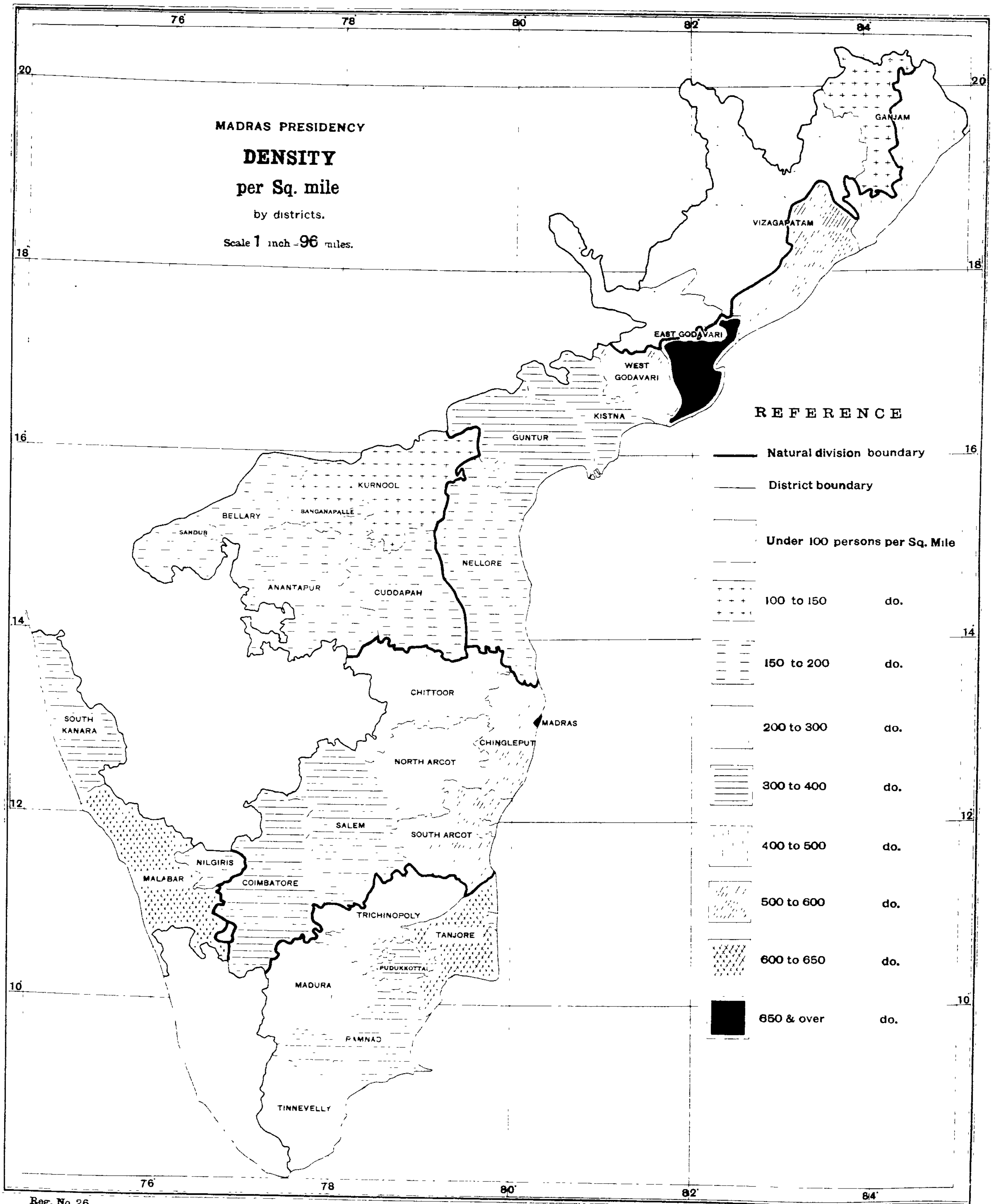
There have been no other widespread influences affecting the general provincial population. It should be remembered however that the rate of increase is by no means uniform over the presidency area. This is only to be expected in regions so far from homogeneous. The logarithmic diagram 6 below will illustrate the different rates of growth in certain typical areas:—

Diagram (Logarithmic) 6.

Population Growth, 1891–1931, in four characteristic areas.



One curve represents the Telugu delta region and covers the taluks of East Godavari plains, West Godavari, Kistna and Guntur associated with the two great river and canal systems. Another corresponds to the Kaveri delta and covers the delta taluks of Tanjore. The others show West Coast and Deccan. The diagram story could be divided into three chapters, covering 1891–1911, 1911–21 and 1921–31 respectively. The tale in Chapter I is of a Telugu rate of growth far greater than the others. In Chapter II its lead over the West Coast in this regard has diminished greatly and in Chapter III has practically disappeared. The assimilation is due to an acceleration of the West Coast rate in Chapter III. The differential circumstances which favoured growth in the Telugu deltas as compared with the West Coast have practically disappeared. Chapter II shows a check in growth in



Reg. No. 26
Copies 1150

MAP I

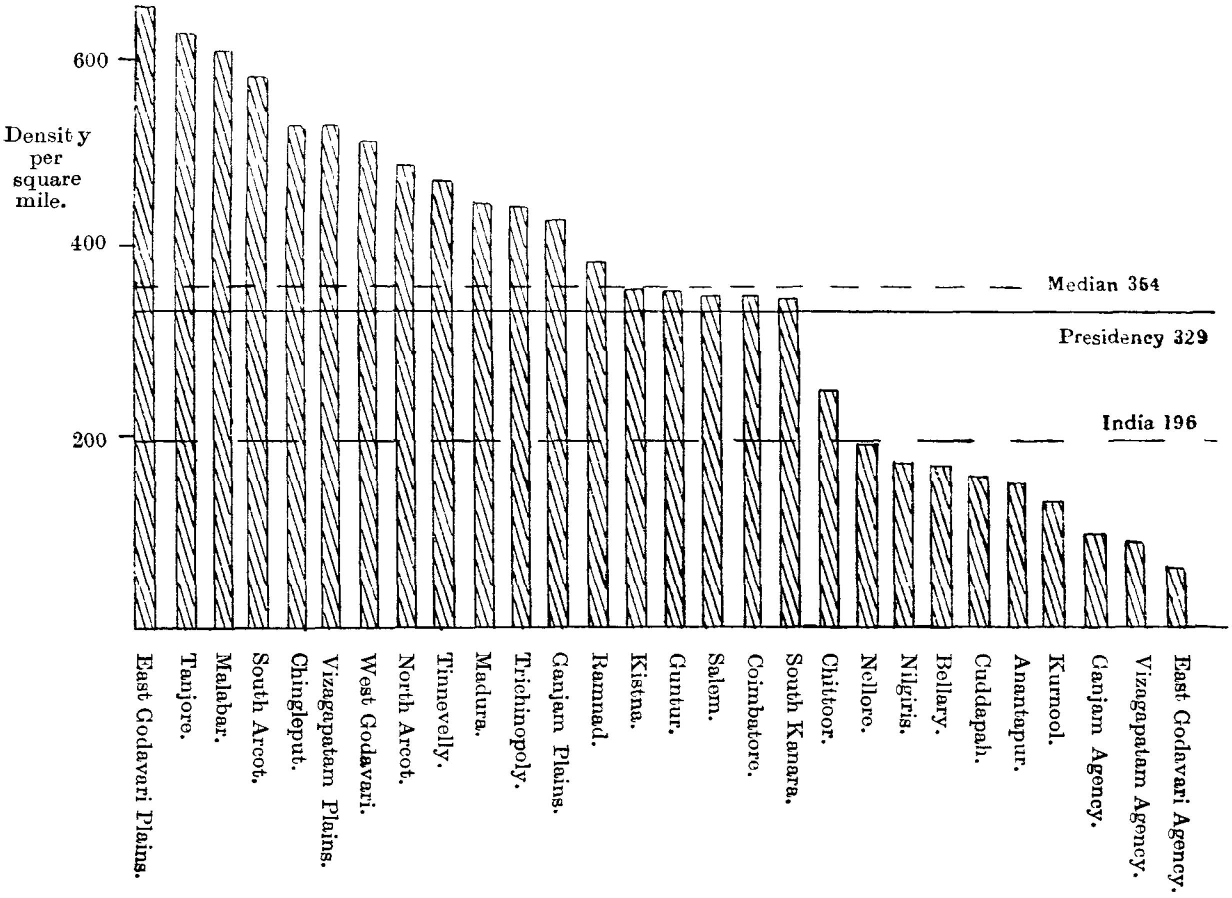
Helio-zinco., Survey Office, Madras.
1932.

all four cases but only for the Deccan and Kaveri does plus become minus. The most interesting features of the Kaveri curve are its flatness and fluctuations. Rate of growth here is indeed small as compared with the others.

Diagram 7.

Madras Districts in order of density.

Madras City would require a column $3\frac{1}{2}$ times as high as No. 1.



Districts density.

12. The districts are shown in order of density in Diagram 7 and Map I opposite gives further illustration. These densities represent the quotients $\frac{\text{population}}{\text{total area}}$. In a homogeneous region this calculation gives sufficiently representative results. Where however the total area figures mask large and varying extents of mountain, forest, water and so on which could never carry the same population as adjoining regions the raw density figures lose much of their value and may be positively misleading. The separation maintained in the tables between the Circars Agencies and their adjacent plains has its origin in the great difference in the conditions of the two regions ; and these differences have a clear reflection in the densities and illustrate the truth of this statement. We cannot fix upon any one natural or physical feature as conditioning density ; in the density function many variables enter. For illustrative purposes however the area registered as cultivable will exclude all regions in which it is physically impossible for population to exist at all or to exist in anything but the scantiest of numbers, and will provide a truer base. Divergences in density will remain, but will be such as can be referred to or will illustrate the other variables such as rainfall.

The percentages of total area returned as cultivable follow fairly closely those of ten years ago. Differences are generally plus, representing the inevitable tendency with growth of population for land once not considered cultivable to be brought within that category. A marked exception is Sandur State which in 1921 showed 62 per cent of its area cultivable but this time shows only 13. In the previous decade the figures furnished from Sandur related the cultivable extent not to the total area of the state but to the area brought to account in

village papers, which excluded wide extents of forests and mountain. Sandur State is essentially a narrow valley of rich red soil contained in an ellipse of forest-clad hills and no one who had traversed it could believe that 60 per cent of its area was cultivable. Sandur State would furnish a remarkable turnover in density in the two tables below for while in the first it would show only 86 to the square mile its position in the second would be high among the ordinary Madras figures with 628.

The small tables below give the Madras districts (1) in order of crude density and (2) in order of density per cultivable area. Agency areas are omitted as really unrepresentative.

	(1)	(2)
1.	East Godavari Plains.	Chingleput.
2.	Tanjore.	East Godavari Plains.
3.	Malabar.	Malabar.
4.	South Arcot.	North Arcot.
5.	Chingleput.	Tanjore.
6.	Vizagapatam Plains.	Vizagapatam Plains.
7.	West Godavari.	South Arcot.
8.	North Arcot.	Ganjam Plains.
9.	Tinnevelly.	Tinnevelly.
10.	Madura.	Madura.
11.	Trichinopoly.	West Godavari.
12.	Ganjam Plains.	Salem.
13.	Ramnad.	Coimbatore.
14.	Kistna.	Trichinopoly.
15.	Guntur.	South Kanara.
16.	Salem.	Ramnad.
17.	Coimbatore.	Chittoor.
18.	South Kanara.	Guntur.
19.	Chittoor.	Kistna.
20.	Nellore.	Nilgiris.
21.	Nilgiris.	Nellore.
22.	Bellary.	Cuddapah.
23.	Cuddapah.	Kurnool.
24.	Anantapur.	Bellary.
25.	Kurnool.	Anantapur.

East Godavari Plains is unable to retain its pre-eminence and yields place to Chingleput by a small margin. This reflects the fact that whereas 70 per cent of Godavari's area is cultivable only 56·5 of Chingleput's is. In the same way, North Arcot, Ganjam, Salem, Coimbatore and South Kanara, all of which have considerable extents of hill and forest, rise in the second table. The Ceded Districts remain at the bottom, the disparity between them and the more fortunate areas being if anything more marked in the second table than in the first. Their order among themselves alters, the influence of Kurnool's great forest area being apparent here.

The past decade—seasons.

13. At the opening of the decade some influences of the war were still apparent and chaotic exchanges greatly affected trade. Its close saw the first stages of the world slump, the catastrophic fall in prices and trade stagnation. In 1921 famine operations were in progress in the Ceded Districts and were again taken up in the same area in 1924. On the whole, however, from a rainfall and cultivation point of view the decade must be taken as not unfavourable. The rainfall conditions are shown in the table below :—

Rainfall in inches.

Year.	South-west monsoon (June to September).	North-east monsoon (October to December).	Dry weather (January to March).	Hot weather (April and May).
Average of 51 years ending 1920	26·22	13·53	1·50	3·98
1921–22	27·28	12·40	1·75	4·22
1922–23	22·71	18·66	4·79	2·04
1923–24	24·79	13·22	1·51	3·55
1924–25	31·63	12·20	1·58	6·22
1925–26	27·11	18·42	3·81	3·27
1926–27	25·90	7·60	1·48	3·40
1927–28	28·42	10·51	2·52	3·50
1928–29	24·04	15·40	1·68	4·61
1929–30	24·30	13·68	3·13	6·78
1930–31	23·43	21·23	0·65	3·56
Average for the decade.	**25·96**	**14·33**	**2·29**	**4·12**

Prepared from the ' seasons & crop ' report of the Department of Agriculture.

Prices and wages.

While inevitable variation is apparent the outstanding influences of rainfall during the decade were much more instances of undue exuberance than of deficiency. The so-called north-east monsoon is so bound up with the formation of cyclonic storms in the Bay of Bengal that it is rare for a cold weather to pass without some part of the Coromandel coast suffering severe flood damage. The past decade bears this out. In 1923 a cyclone in Ganjam and Vizagapatam made over 60 breaches in a hundred miles of railway line, preventing through communication for six weeks, and spread damage and destruction over a wide area. The violence of the rainfall is illustrated by the fact that over 25 inches fell in one day near the coast in North Ganjam. 1924 saw destructive floods in Tanjore and Trichinopoly which led to

much valuable land being covered with sand and rendered unfit for cultivation, and the last year of the decade saw the Kaveri delta again afflicted. The 1927 cyclone in early November brought widespread destruction to Nellore. Malabar and South Kanara and Tinnevelly also suffered from flood eruptions and it may safely be said that untimely excess of water resulted in more loss of revenue and general hardship than its lack. The table below shows the agricultural loans granted during the decade; the variations in the figures reflect to some degree the presence of circumstances adversely affecting cultivation :—

Disbursement of Loans.

Account year.	Fasli year.	(1) Takkavi loan.			Co-operative credit loans.
		L.I.L.	Agriculture.	Total.	
..	1330	7,45,903	8,81,686	16,27,589	
1920–21 ..	..	..	..	..	87,90,634
..	1331	8,22,255	13,15,956	21,38,211	
1921–22 ..	..	..	..	..	1,17,05,995
..	1332	7,60,647	7,20,480	14,81,127	
1922–23 ..	..	..	..	..	1,26,00,177
..	1333	17,24,680	18,37,781	35,62,471	
1923–24 ..	..	..	..	..	1,47,62,359
..	1334	17,15,856	20,03,807	37,19,663	
1924–25 ..	..	..	..	..	1,54,07,455
..	1335	11,31,355	9,95,825	21,27,180	
1925–26 ..	..	..	..	..	1,63,87,250
..	1336	15,52,819	14,21,011	29,73,830	
1926–27 ..	..	..	..	..	2,32,87,232
..	1337	12,69,926	11,54,189	24,24,115	
1927–28 ..	..	..	..	..	2,63,56,812
..	1338	5,94,560	9,29,548	15,24,108	
1928–29 ..	..	..	..	..	2,47,23,112
..	1339	4,98,869	9,32,255	14,31,124	
1929–30 ..	..	..	..	..	2,55,39,379
..	1340	4,19,942	10,55,729	14,75,671	
1930–31 ..	..	..	..	..	1,60,92,965

NOTE.—(1) 1330 fasli embraces the period 1st July 1920 to 30th June 1921 and so on.
(2) 1920–21 (Account year) embraces the period 1st April 1920 to 31st March 1921 and so on.

The chief point of note about cultivation in the decade was the great development in groundnut. This was so extreme that in 1928, 70 per cent of the exports from Madras Harbour consisted of this and the favour given to it resulted in imports of foodstuffs having to be increased. Trade on the whole was brisk and prices throughout most of the decade steady and favourable. The last year of course showed the influence of the slump in a marked degree which the table below will help to illustrate :—

Prices of staple Foodgrains.

(In terms of imperial seers of 80 tolas per rupee.)

(Fasli) year.	Rice.	Ragi.	Cholam.	Cumbu.	(Fasli) year.	Rice.	Ragi.	Cholam.	Cumbu.
1921–22 ..	5·4	8.8	8·2	8·2	1927–28 ..	5·5	9·3	8·8	8·5
1922–23 ..	5·7	9·7	9·6	8·9	1928–29 ..	6·2	10·5	10·1	10·1
1923–24 ..	5·8	9·9	9·1	8·7	1929–30 ..	6·6	11·9	11·4	10·7
1924–25 ..	5·1	9·0	8·5	8·4	1930–31 ..	8·4	16·0	15·6	13·8
1925–26 ..	5·5	9·9	9·5	9·1	Average for the decade ..	6·0	10·4	10·0	9·5
1926–27 ..	5·4	9·4	9·1	8·5					

N.B.—Prepared from the Board's annual statements showing average retail prices for each fasli from 1331 to 1340.

The price of ragi for example was at the end practically half what it was at the opening of the decade. Rice had fallen by a half. The decade from a cultivation sense closed gloomily in that the price of the industrial crops which have become so popular and from which many ryots look to pay the land assessment had fallen enormously and that frequently owing to the stagnation of trade, particularly in groundnut, no sale was possible even at low prices. The grower of food crops was in a better position because these can always be sold in a country which does not produce enough to feed itself but the returns were disappointing. The labouring classes came off best, for the price of the articles which formed the bulk of their daily food had fallen enormously more than any

diminution in wages. A growing difficulty in securing employment marked however the influence of the slump upon them. The statement below shows the areas of the principal food and commercial crops for the ten years:—

Areas under principal food and commercial crops (in thousands of acres).

	1921-22.	1922-23.	1923-24.	1924-25.	1925-26.	1926-27.	1927-28.	1928-29.	1929-30.	1930-31.
Food crops—										
Paddy	11,280	11,286	10,517	10,870	11,323	10,842	10,930	11,019	11,262	11,678
Cholam	5,573	5,255	4,647	4,944	4,546	4,692	4,830	4,615	5,174	4,761
Cumbu	3,197	3,078	2,645	3,047	3,074	3,080	3,276	3,067	2,888	2,913
Ragi	2,493	2,583	2,592	2,441	2,331	2,273	2,302	2,254	2,270	2,166
Commercial crops—										
Gingelly	778	727	696	784	791	682	837	760	773	746
Groundnut ..	1,459	1,754	1,812	1,904	2,599	2,680	3,337	3,679	3,209	3,572
Castor	381	327	339	359	378	385	360	344	256	283
Sugarcane	119	131	121	110	113	114	106	89	98	115
Cotton .. .	1,783	2,323	2,632	2,866	2,887	2,204	2,100	2,465	2,477	2,041
Indigo	197	141	91	70	78	54	40	49	53	47
Tobacco	203	214	220	261	244	232	276	255	257	243
Total ..	**27,463**	**27,819**	**26,312**	**27,656**	**28,364**	**27,238**	**28,394**	**28,596**	**28,717**	**28,565**
Total cultivated area ..	**37,533**	**37,762**	*** 36,424**	**37,924**	**38,788**	**37,367**	**38,558**	**38,779**	**39,259**	**39,193**

N.B.—Prepared from the 'season and crop' report of the Department of Agriculture.
* Lowest on record since 1909–10 with the exception of the bad year 1918–19.

The great increase in groundnut is at once apparent and at the middle of the decade cotton too had risen enormously above its figure at the opening. A steady rise in tobacco is of interest and in its later stages reflects the influence of the boycott of foreign goods which led to a great development in the manufacture and use of Indian-made beedies. Other crops reflect little except seasonal vicissitudes.

Irrigation. 14. The total area irrigable in the presidency in 1921 was 6,108,332 acres, and the similar figure for 1931 6,265,900, giving an increase of 157,568 acres. The area considered as commanded by these works rose from 6,861,973 to 6,939,704 acres. The extent actually irrigated in the last year of the decade was 5,819,907 under first crop and 1,220,066 under second crop. The first crop figure is above that of ten years before, the second crop figure considerably below, with the result that the total irrigated extent in 1931 was 7,573,043 acres as against 7,373,787 in 1921. The irrigation systems of the presidency in the absence of large new works have therefore reached a stage of comparative inelasticity. The advent of the Mettur Project will increase considerably the efficiency of irrigation in South India and it is possible that by next census a decision will have been reached on the ancient question of using the Tungabhadra for irrigation in the Deccan. This project if carried out will ultimately alter the face of that characteristic region. The total value of crops raised on irrigated areas in 1921 was Rs. 43,25,96,011 and ten years later Rs. 23,58,30,533. A fall of almost 50 per cent in value from an increased irrigated area is a sufficient indication of the difference in price levels of 1921 and 1931.

The figures below show the percentage borne by the actually irrigated area to the area commanded by the three great irrigation systems of the presidency:—

Godavari delta	.. 82	Kistna delta	.. 82	Kaveri delta	.. 99

They show that there is a theoretical margin of extension still available in the Godavari and Kistna systems, mainly in the districts of West Godavari and Kistna, but also in East Godavari and Guntur. The extension areas in acres in these districts are :

East Godavari	19,253	Kistna	97,700
West Godavari	150,500	Guntur	27,000

The Kaveri system on the other hand is used to its maximum. A comparative saturation of population has an obvious connection with this fact. Other districts in the Madras presidency which offer at least on paper possibilities of extension of irrigation under present systems are Kurnool, Cuddapah, Ganjam, Nellore and the Arcots. The margin in Kurnool and Cuddapah represents area commanded by the Kurnool-Cuddapah canal which leads waters from the Tungabhadra river not far from Kurnool. The waters of this canal are not used as they might be, largely because the peculiar soil of the area is considered

by ryots not suited to heavy irrigation. This canal has so far operated as essentially a protective work. Elsewhere the extension possible is slight or nil. Over the whole presidency 90 per cent of the area commanded is already under irrigation. In the districts of least growth of population, Trichinopoly and Tanjore, the possibilities of development of existing sources of irrigation are practically exhausted. The area commanded in the districts varies widely for while in Tanjore it approaches 1,000,000 acres it is less than 200,000 in Trichinopoly and less than 50,000 in Ramnad, which is the lowest of all presidency districts in the area commanded by irrigation systems. It is noteworthy that emigration is heavy from the districts of less irrigation possibilities. Vizagapatam, Salem, Trichinopoly and Ramnad all fall within this category.

The chief irrigation feature of the decade was the decision to construct the Mettur reservoir on the Kaveri. This will be one of the biggest masses of masonry in the world, the dam being 5,300 feet long and 176 feet above the average bed level. The lake formed will be of 100 miles circumference and the area submerged $59\frac{1}{4}$ square miles. The effective storage capacity will be 93,500 million cubic feet. A notable feature of this scheme was the extensive use of machinery and a visit to Mettur to watch the concreting towers at work became almost a feature of South Indian journeying. This scheme will not affect the district in which the reservoir is situated but will go to improve irrigation in parts of the Tanjore delta and to extend irrigation to certain dry regions in that district. The Mettur camp with its 20,000 inhabitants, its excellent water supply, sewage and lighting made one of the most interesting visits in the census itinerary. This extension of irrigation will almost certainly lead to an increase in the population of the southern taluks of Tanjore district affected by it. All these taluks have contributed largely to emigration; it will be interesting to see to what extent the extension of irrigation facilities within them checks this flow.

15. The decade as compared with its predecessor was much less unhealthy. No great epidemic devastated it and in its course two at least of the chief epidemics, cholera and plague, were subjected to very considerable reduction. Public Health administration was organized and every district has now its health officer. A list of festivals is kept and arrangements made in advance for adequate sanitary and other preparations for the advent of pilgrims. Plague in particular was brought under almost complete control and the returns in 1930 were the lowest on record for any year since the disease made its appearance 30 odd years ago. Cholera too reached its lowest figure during the decade, in 1922–23 and from 52,000 deaths in 1924 cholera damage was brought down to under 19,000 in 1930, with only one bad relapse in 1928 when 57,700 deaths were reported. It was claimed, not unreasonably, by the Director of Public Health that since 1923, 133,000 lives had been saved in the presidency by public health measures against cholera in addition to positive measures of administration and prevention. Much research was applied to this disease under the guidance of Colonel Russell, I.M.S., Director of Public Health during most of the decade. As a result of these researches elaborated with much mathematical skill, it was shown that over a long period of years cholera has had a tendency towards a six-year cycle, although it was not claimed that the problems associated with the epidemiology of cholera were so simple as to be explained by a cyclic trend. Correlation of the disease with certain climatic factors also elucidated facts sufficiently important to enable the Public Health Department to forecast possible outbreaks and more or less free periods, and these forecasts have been of great value in preventing waste of effort in unnecessary directions at unnecessary times. In general, it may be said that high temperature and high humidity are favourable to cholera. The centre and south of the presidency are never cold enough to inhibit the growth of the cholera bacillus. The northern part of the presidency on the other hand shows a distinct lag of one month in the temperature correlation. Rainfall correlation is direct in the northern districts and shows a two months' lag in the others. Moreover, the Madras Presidency possesses a true endemic area in the Tanjore delta and possibly also in the Tambraparni valley in Tinnevelly. The cholera researches of the Public health.

Madras Public Health Department are of great interest and value and have contributed greatly to the understanding of this disease in the country and in the world.

Vital statistics registration.*

16. The institution of a separate Public Health body of officers throughout the presidency has brought about a much closer control over vital statistics and the great improvement in the registration of these details is one of the most notable features of public health during the decade. Public health activities depend so much on statistics that a high standard of registration is essential if reliable deductions are to be made. Registration of vital statistics in the presidency began in 1865 when under the orders of the Board of Revenue village headmen were required to maintain birth and death registers. Registration was not obligatory until an Act was passed in 1899 providing for the registration of births and deaths in rural tracts. This Act is enforced only in those rural areas to which it has been extended by notification. In such areas registration is compulsory with penalty in case of failure. The general sequence is : the village headman sends a monthly return to the taluk office ; this last sends these returns to the Collector's office and there consolidated results are worked out for each district and are finally sent to the office of the Director of Public Health. From 1925 district health officers have been scrutinizing these consolidated returns prior to their despatch to Madras. Municipal councils are in charge of registration in their areas and under an Act of 1920 registration is compulsory in all municipalities. At present registration is compulsory throughout the presidency except in most of the Agency tracts, the Laccadive Islands and one or two other small areas.

The above enactment provided from a general point of view ample powers of securing efficient registration. In practice, however, Madras vital statistics are anything but above cavil. An exhaustive investigation proved the birthrate to be 42·5 per 1,000. Yet according to the public health statistics in 1921 the average birthrate varied from 27 to 31, while individual oscillations ranged from 47 in Periyakulam to 6·8 in Chirala. Such figures could not possibly represent facts and an example of the effects which gross neglect of registration can produce is given by a municipality in Chingleput district where out of 41 births discovered 26 had not been registered and out of 62 births attended by hospital midwives 36 had not been registered. In later years public health officers in the districts have devoted particular attention to checking the registration work of village officers and so late as 1930 almost 62,000 unregistered births and 20,000 unregistered deaths were detected in the presidency. From 1923 to 1930 the health staff deducted no less than 626,000 unregistered births. The rural agency is as in everything else the village officer and it is his vagaries which are discovered by health officers when they scrutinize these widely discrepant returns. For several years the Director of Public Health pressed for compilation of vital statistics to be done in his office instead of in Collectors' offices and this change has at last been ordered. From it a further improvement in the vital statistics record is expected. An example of how low the village officer's work can go is given by Nellore district from which in 1921 only 25–35 per cent of the 16,000 villages sent in their monthly returns. It was not surprising that birth and death rates of 11·7 and 9·1 were shown for the year. Another source of inaccuracy is that such registration as is made is not done at the time of the occurrence ; entries are generally written up just before the monthly return has to be submitted. This leads to peculiar results such as the date of registration being found actually to precede the date of the event. Still more remarkable results come when an attempt is made to classify causes of death. It is asking a good deal of a layman to distinguish between various kinds of fever but he ought to know the difference between fever and diarrhœa. The ' fevers ' entry in the village register covers probably instances of practically every disease met with in India. Much the most remarkable registration feat performed by village officers was however the recording of childbirth as the cause of death among men. This is either

* I am indebted for comment and suggestion on this matter to Major J. R. D. Webb, I.M.S., Director of Public Health.

the height of carelessness or a miracle and the probabilities are in favour of the former. When registration is made compulsory in any area the statistics for that area generally diminish at first in accuracy. This is because the registering officers imagine that when compulsion is introduced their responsibility ceases and they need record only what is reported to them. The populace on the other hand care for none of these things and take long to realize that anything has been changed; between them the statistics suffer.

Two other directions in which vital statistics could be improved relate directly to a tightening up of control and administration in making known and in enforcing the penal provisions of the Acts and in insisting on municipalities and panchayats taking their registration duties more seriously.

In calculating birth and death rates the census population is used without allowance for any increase in the intercensal period. This results in public health statistics being based on wrong population figures and these statistics therefore do not reflect the exact position and are apt to give an incorrect picture. Notable examples could be taken from Salem city throughout the past decade. The 1921 census enumeration of this city was completely vitiated by a plague exodus, so much so that it would have been well had a fresh census been taken after the plague scare had died down. During the decade birth and death figures were related to this quite unrepresentative population with the consequence that Salem showed birthrates of over 60 and deathrates of corresponding elevation in gross contradiction to recognized facts. It is quite possible to make close approximations to population in intercensal years and to use these for vital statistics. This process is in fact pursued in most countries with a developed system of registration and is employed in subsidiary tables to Chapter IV. Apparently however the approval of the Government of India would have to precede the making of such a change in Madras; if so, one can only suggest that the more quickly it is made the better, for it cannot conduce to public respect for or belief in statistical examinations or predictions if these are prevented from seeking the most representative starting point. An example of the closeness possible in such estimates is given by the fact that actual computations done in Madras yielded a population of 47·16 millions; the enumeration showed 46·73 millions. Allowing for the effects of emigration and immigration the difference cannot be considered large and shows at any rate that the registration of vital statistics in the province has largely improved during the decade.

17. Possible correlations of such social phenomena as birth and fertility rates with food prices, seasons, disease incidence and so on, offer a wide field for speculation. It is because a speculative element enters even into original data that such correlations are apt to mislead. Framing of them is easy; graphs can be drawn showing apparent connections for even the most diverse phenomena, not to mention those in which ordinary knowledge has established a relationship. Some are so obvious that their statement at this time is redundant. To establish a correlation is however a very different matter and involves as a first essential a rigid determination or at least estimate of the probable error. Where this last is considerable it either removes everything of certainty from the alleged correlation or so emasculates it as to render its evidential value illusory and not worth the trouble involved by its preparation.

These comments apply with force to much of the speculation indulged in on such topics as those mentioned. The data sometimes contain not only a considerable possible error but that error varies itself in an indeterminable manner as the result of vagaries or it may be improvements in collection. Mere command of mathematical methods in such cases is not enough; a profound acquaintance with the value of the data offered and material for assessing the probable error are prior essentials. Speculation in such cases should in fact be left to persons with long experience and professional knowledge and is not worth doing even then till a long series of reasonably comparable data is available.

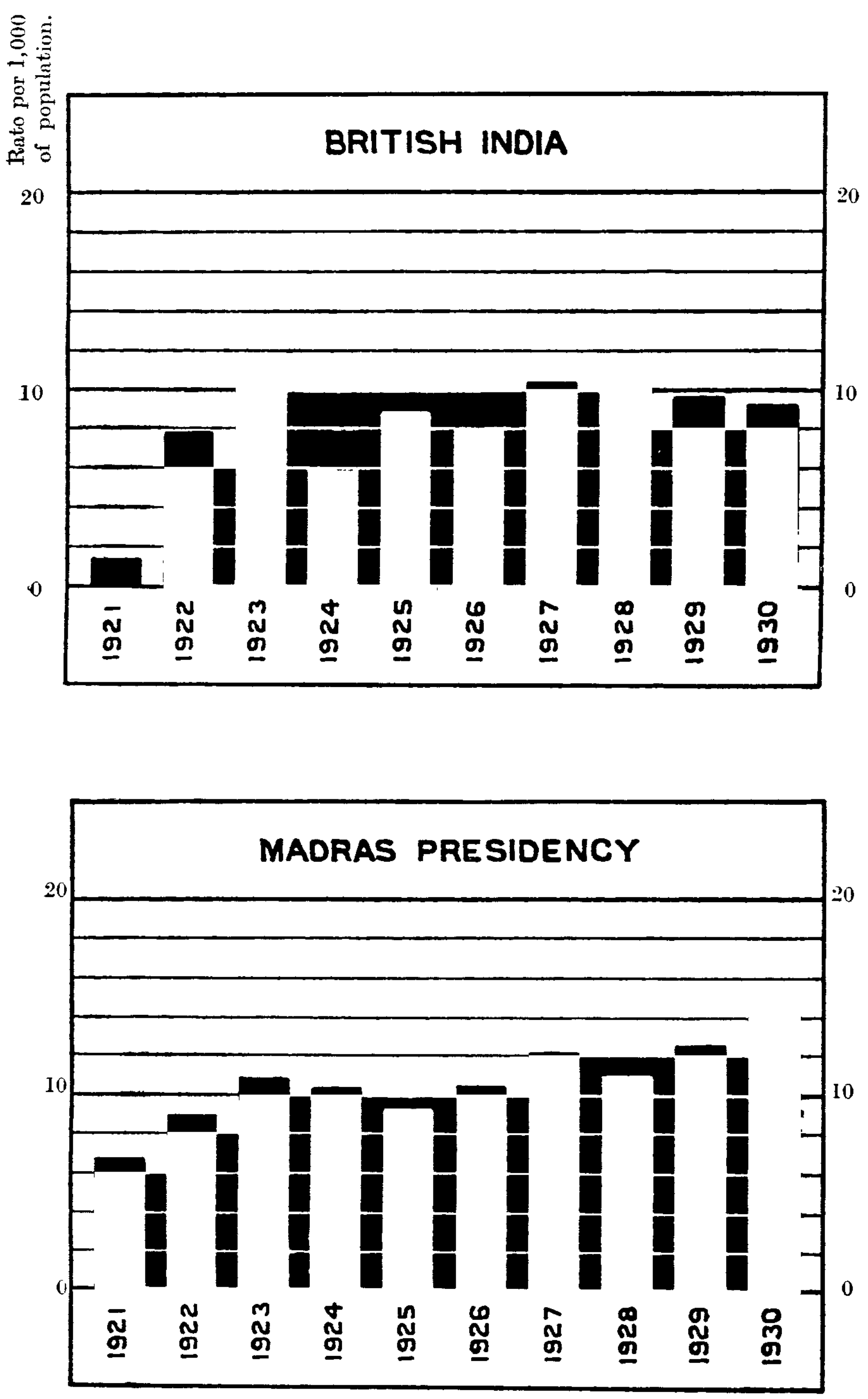
18. Lieutenant-Colonel Russell, I.M.S., Public Health Commissioner for India, was good enough to give me copies of the handsome diagrams below which illustrate periodical increase in Madras Presidency and British India from the point of view of vital statistics. These statistics are subject to the drawbacks already indicated but the graphs are the result of expert knowledge and experience of these statistics and may be taken as the best expression available of them.

In diagram 8 for Madras a distinct upward trend can be detected at once. Calculation of this from the yearly totals and its representation by a line would add greatly to the illustrative effect, for the line would rise steadily from left to right. Diagram 9 shows birth and death rates from 1901, the unrepresentative influenza year 1918 being omitted. The increased trend of the difference is noticeable, particularly at the end of the decade. Diagram 10 might be said to be the preliminary to 8, showing the material from which this last was prepared.

The British India diagrams do not offer the same clear indication of trend. Variations in the collection and value of vital statistics probably enter here and account in part for the fact that in diagram 9 the British Indian deathrate seems to fall as against a rise in Madras.

Diagram 8.

Rates of Natural Increase of Population in British India and Madras Presidency per 1,000 of inhabitants during each year of 1921–30.



In general these diagrams bear out the census tale of a greater increase in 1921–31 than in the previous two decades and seem to show that increase as a feature particularly of the concluding years.

Diagram 9.

Trend of the Birthrate, the Deathrate and the Natural Increase in Population during the 30 years period 1901–30 in British India and Madras Presidency.

(Five-yearly averages per 1,000 inhabitants.)

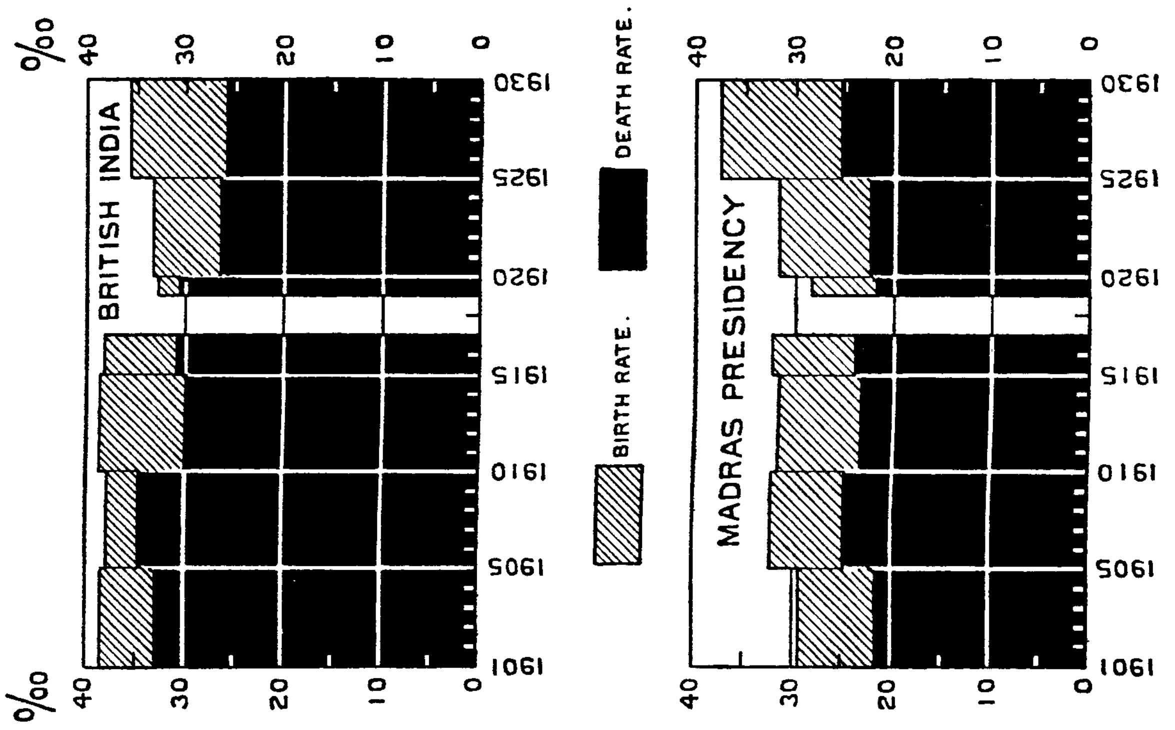
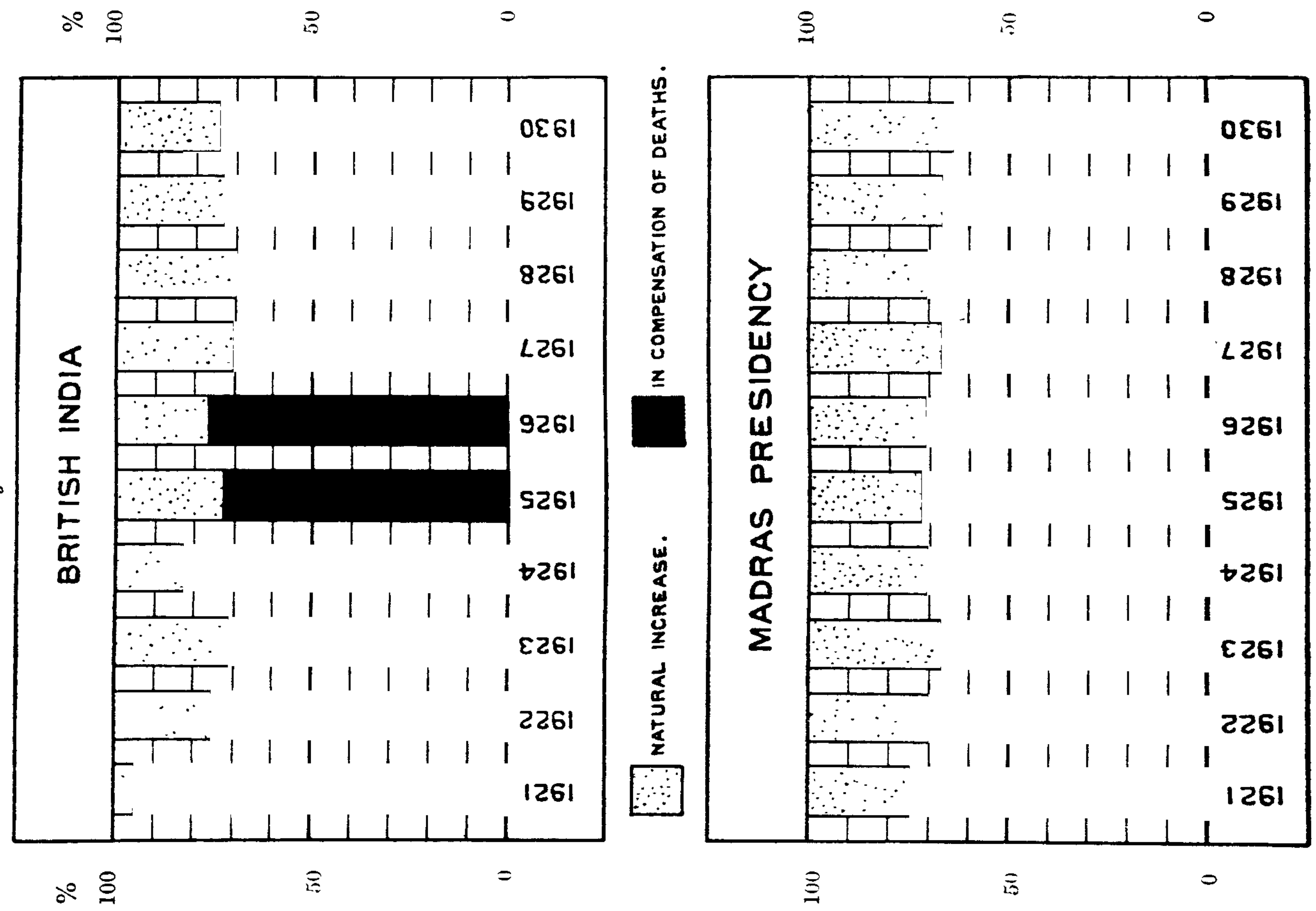


Diagram 10.

Proportion of the Births constituting the natural increase of the population in British India and Madras Presidency in each year during 1921–30.



19. Railway communications have undergone considerable development since 1921. Most of this has taken place in the south of the presidency on the South Indian Railway. The milage of this line has increased from 1,852·47 to 2,459·55. Several chord lines have been constructed which open up new territories to railway penetration and save considerable time in journeys formerly involving detours. Examples are the Villupuram-Vriddhachalam-Trichinopoly chord cutting out Cuddalore, the Virudhunagar-Tenkasi line which cuts out the Tinnevelly loop on the way to Travancore and finally the most recently **Communications.**

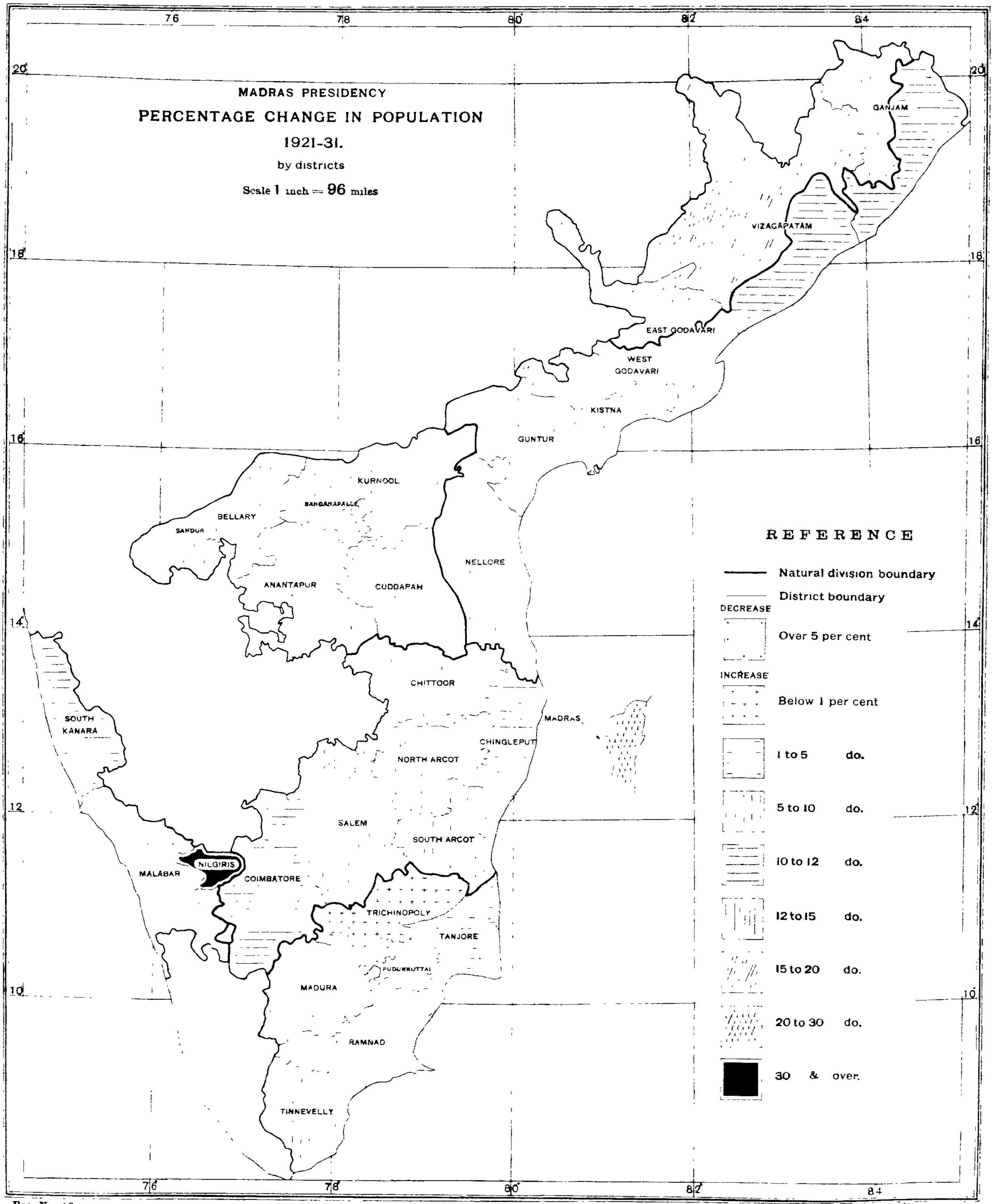
opened of these chords, that from Trichinopoly across Pudukkottai to Manamadura. The Ceylon mail now follows this route and Madura is no longer a station on the direct Madras-Ceylon line. The enormous west-pointing ' V ' made by the South Indian Railway system has been at last short-circuited. The connection between Dindigul and Pollachi has opened up completely new country to the railway and also to the traveller who catches many a lovely glimpse of mountain scenery in his journey. Another important new link is that which connects Salem with the East Coast at Cuddalore *via* Attur and Vriddhachalam. New branch lines of interest run from Tinnevelly to Tiruchendur, the famous Saivite shrine and pilgrim centre on the Gulf of Manaar, and from Madura to Bodinayakkanur, at the foot of the eastern slope of the Western Ghats. Much plantation produce finds an outlet here and a ropeway connects Bodinayakkanur with the ghats above. Among minor developments may be noted the short line up to Nilambur through part of the Mappilla country and the conversion of the Erode-Trichinopoly branch to broad gauge. This last was a necessary stage in the concentration at Golden Rock, near Trichinopoly, of all the South Indian Railway shops. Road-rail competition may be seen on this line any day ; the road and the railroad are never far apart and for long stretches go side by side ; the advantage lies with the road. Railway operations in contemplation as a result of the development of Cochin Harbour are the conversion of the Cochin State Railway to broad gauge to secure a through connection with Madras and the construction of a metre gauge connection from Palghat through Trichur to this line.

The Madras and Southern Mahratta Railway system has seen little alteration during the decade. Short lines have been built in the Godavari-Kistna delta and in Guntur and one small length of new line is of considerable interest, viz., that which by completing the connection between Hyderabad and the Madras and Southern Mahratta Railway metre gauge system converted Kurnool town from a railway dead-end into a thoroughfare.

The most interesting of all railway developments affecting the presidency is that which connects the East Coast at Vizianagram with the Central Provinces at Raipur and thus adds a considerable limb to the cross-India cuts. Through transportation began on this line in 1932. The ordinary railway project takes its rise from facts of existing population or movement of goods ; this line is rather a gamble on a harbour ; whether the gamble will be successful remains to be seen, but its effects on the primitive country now opened for the first time to railway penetration and on the simple peoples of the region will be profound. A development in lateral communications, hitherto scanty and poor in these areas, will probably be one consequence.

Ports and harbours.

Though the geographical position of the presidency is favourable for international commerce the littoral is remarkably deficient in suitable harbours to accommodate vessels of the draught now employed in the carrying trade. The West Coast ports are practically closed to traffic from the end of May to September by the violence of the monsoon, while the East is surf bound and without any natural harbours, though Madras has been made into a safe anchorage by the construction of sea walls. During the decade it was decided after prolonged investigation to construct deep-water ports at Cochin, Tuticorin and Vizagapatam. Ocean-going vessels can now enter the great backwater at Cochin at any time and be unloaded and loaded in quiet water by lighters. The question of constructing quays and other appointments of a first-class harbour is at present under consideration. The Tuticorin project has been abandoned for the time being. The construction of the Vizagapatam harbour contemplates utilization by the end of 1932. With the completion of the Raipur-Vizagapatam line, the central parts of India have been brought about 160 miles nearer to Vizagapatam than to Bombay or Calcutta and it is hoped that large exports of manganese ore, cotton and other produce will be shipped from Vizagapatam. The following statement compares the trade of the several ports of the presidency at three different stages of the decade, viz., 1921–22, 1928–29 and 1930–31.



Reg. No 43
Copies 1150

MAP II.

Helio-zinco, Survey Office, Madras.
1932.

Trade of important Ports.

—	1921–22.			1928–29.			1930–31.		
	Foreign trade.	Coasting trade.	Total trade.	Foreign trade.	Coasting trade.	Total trade.	Foreign trade.	Coasting trade.	Total trade.
	RS. LAKHS.	RS. LAKHS.	RS. LAKHS.	RS. LAKHS.	RS. LAKHS.	RS. LAKHS.	RS. LAKHS.	RS. LAKHS.	RS. LAKHS.
Madras ..	2,727 04	748·71	3,475 75	4,279 86	922·22	5,202 08	2,842·17	857·74	3 699 91
Tuticorin ..	545·49	342·14	887 63	616·80	569·56	1,186·36	487 26	425·80	913 06
Cochin ..	312·74	658 52	971·26	598·99	600·21	1,199 20	452 81	586 65	1,039 46
Calicut ..	119·00	234·42	353·42	383·50	409 61	793 11	333·23	458·97	792 20
Cocanada ..	52·26	118·10	170·36	418·41	164·39	582·80	303·39	136·70	440 09
Mangalore ..	88·97	200 07	289 04	170 32	166 42	336 74	190 11	163·33	353·44
Dhanushkodi ..	257·61	0·18	267 79	357·77	0 05	357·82	297 93	.	297 93
Negapatam ..	112·06	31 64	143·70	192·19	31·63	223·82	113·65	26·70	140 35
Cuddalore ..	183·43	40 00	223 43	146 21	29 19	175 31	93·82	32 24	126 06
Tellicherry ..	55 49	35·86	91·35	54·85	38 49	93 34	46·82	34·58	81 40
Vizagapatam ..	14 88	25·49	40 37	93 34	16·28	109 62	44 28	19 44	63·72
Badagara ..	4·22	56·71	60 93	0 64	72 08	72·72	2·43	82·85	85·28
Cannanore ..	1·98	74·81	76·79	5·24	92·39	97 63	7·80	68·04	75·84
Porto Novo ..	55·50	0·26	55·76	34 69	0·82	35·51	27·08	0·15	27·23
Bimlipatam ..	11·85	13·33	25·18	34 21	6 13	40·34	28 29	6 38	34 67
Other Ports ..	10·71	164·91	175·62	31 22	157·47	188·69	27 27	123·14	150 41
Total ..	**4,557·06**	**2,772·64**	**7,330·24**	**7,418·24**	**3,276·94**	**10 695·18**	**5,298·34**	**3,022·71**	**8,321·05**

Emigration. 20. Emigration during the decade was affected to some extent by the passing of the Emigration Act of 1922 which brought under control all assisted emigration to Ceylon and Malaya. Such emigration is largely seasonal and ordinarily sees its maximum in the hot weather months when agricultural activity is practically at a standstill. If, however, a monsoon fails, a reflection is seen in increased emigration and this occurred, e.g., in the cold weather of 1922–23 as a result of a poor north-east monsoon in the south. Towards the end of the decade emigration was considerably affected by the great slump in plantation activities in Malaya to which country all assisted emigration ceased after the 1st August 1930. Favourable terms to induce Indians to return had in fact been in operation for some time before that date. Ceylon showed a less pronounced check, for the slump had been under way there for some considerable time and its effects on labour were therefore spread over a longer period. Emigration figures to Ceylon too however showed a steady decrease from the 1927 maximum, the 1930 figure being little more than half that for 1927. The agreement with South Africa for the repatriation of Indians brought over 30,000 persons back to the presidency. These must be taken as a definite addition to its population not counterbalanced by any emigration ; for emigration to South Africa has been forbidden since 1917. The same applies to Fiji from which country an average of 300–400 has returned each year. In general the effect of the slump at the end of the decade must have been to add to the population of the presidency many persons who would otherwise have been beyond its bounds on census night.

Change in population. 21. Map II gives at a glance the different degrees in which population has changed in various parts of the presidency during the decade. Closeness of pattern in this as in all maps indicates greater magnitude. The darker areas correspond to the Nilgiris and Madras city, the southern agencies and the Telugu deltas, the more southerly of the Ceded Districts and Malabar. The heaviest turnovers from 1921 are as might be expected in those areas which suffered most severely from the influenza pandemic of 1918. Bellary and the Agency tracts for example show a turnover of above 20 per cent. Bellary's decrease in 1921 from 1911 was 11 per cent. Its increase during 1921–31 is 12 per cent. These considerations do not however apply to all the areas of darker coloration. The Nilgiris show much the greatest actual increase with 33·8 per cent. This is not really a representative district but one of those exceptional regions of which most provinces can offer an example. It contains still many vacant spaces and retains the faculty common to all new lands of absorbing large immigration. Madras is purely urban and not comparable with the ordinary district. Its large increase, 22·8 per cent, is however the more notable from having followed on decades of very small accretion. Previous superintendents had in fact doubted whether Madras could ever go much beyond the half million. Its answer on this occasion has been in no uncertain terms. The decade saw an addition to the city territory and considerable industrial extension on its margins. The steady growth in population

of the Telugu delta region has already been the subject of comment. This may be said to be a function of irrigation and prosperity. Malabar's increase of 14 per cent ranks it among the more considerable of Madras districts in this regard but it falls considerably behind its southern neighbours on the west coast, Cochin and Travancore, each of which records well over 20 per cent increase. A heavier increase on the west coast might be expected from considerations of climate and fertility; but South Kanara, it should be observed, does not reach the Malabar standard and in fact population increase shows a diminution on the west coast from south to north. It is interesting to observe that the Bombay coast district adjoining South Kanara on the north continues the diminution by registering only 4 per cent increase.

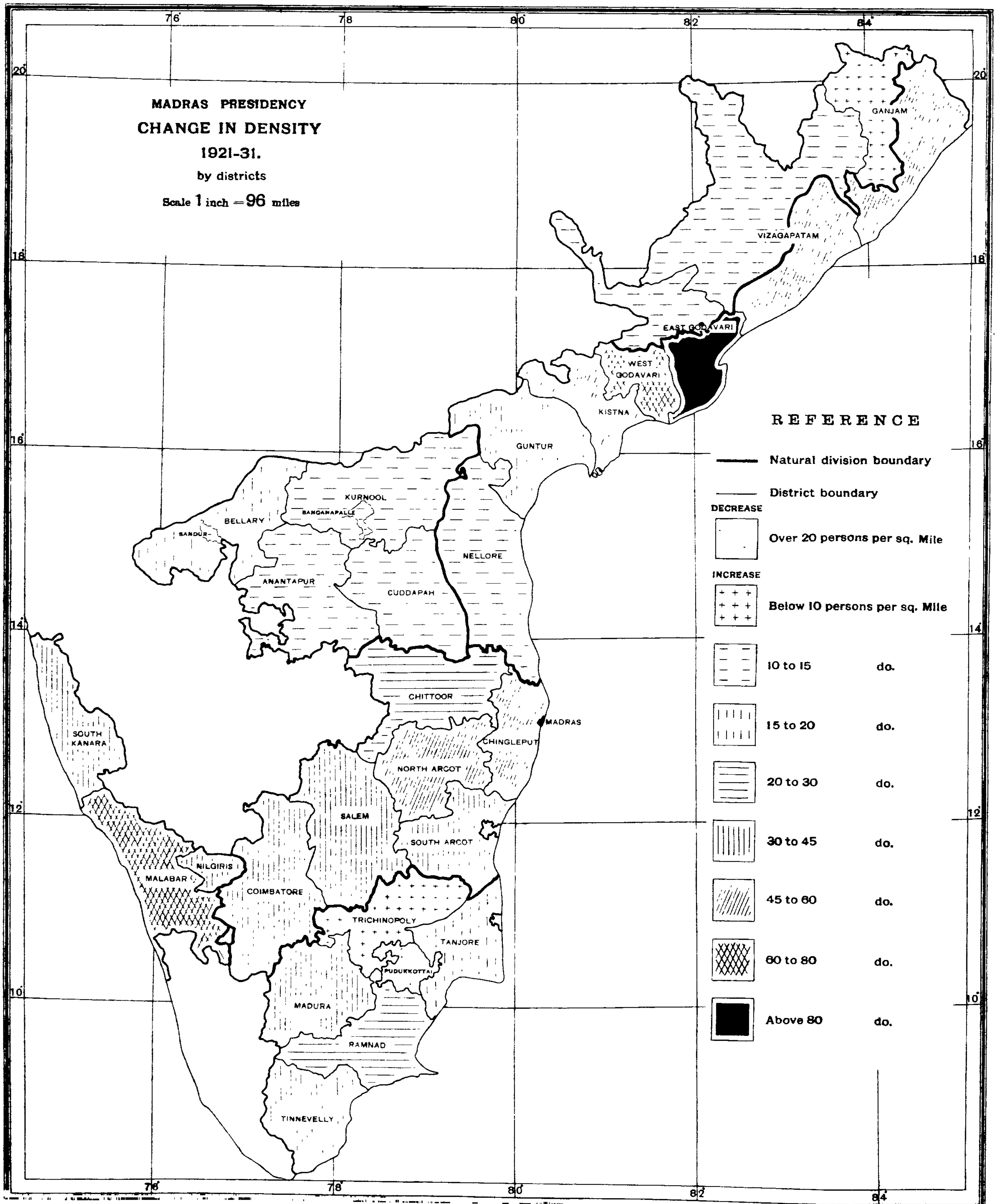
Two belts of low increase are observable, one in the centre of the presidency, the other in the south, the latter having as its approximate centre the only principal unit of the province to show an absolute decrease, Pudukkottai State. The more northerly of these belts covers the districts of Nellore, Cuddapah, Anantapur and Chittoor. These are regions of uncertain rainfall, many hills, outcrops of stone and varying soil where the precarious aspects of cultivation are most marked. It is not surprising that increase in such an area should be less than in more favoured regions. The low increase in the southern belt however, is more difficult to explain. Ramnad district, especially its dreary eastern tract, is not an inviting zone but the same could not be said of Tinnevelly or Madura or Tanjore or Trichinopoly. Trichinopoly district in particular, at a time when the presidency population was increasing by 10 per cent, could not even register 1 per cent rise; yet during the decade it had a positive accretion of population running into thousands as a result of the transfer from Negapatam to Golden Rock of the South Indian Railway workshops, a transfer which meant the creation of an entirely new town with a population returned at over thirteen thousand, in itself 1 per cent of the 1921 population of the district.

Birth and death rates. 22. The table below gives figures of annual birth and death rates for the southern Tamil districts and for the presidency:—

	Average annual birthrate.	Average annual deathrate.	Excess of birthrate.
Ramnad	26·6	19·3	7·3
Madura	32·6	22·4	10·2
Tanjore	29·6	25·9	3·7
Trichinopoly ..	27·4	21·6	5·8
South Arcot	29·8	22·2	7·6
Average for the districts.	29·2	22·3	6·9
Presidency	**34·6**	**23·9**	**10·7**

This table shows at once that the average excess of births over deaths is much less in these districts than in the presidency as a whole, the deficiency being particularly noticeable in the case of Tanjore and Trichinopoly. Increase of population apart from results of emigration and immigration is due to the net excess of births over deaths and the above table would therefore lead one to expect a slower growth in these Tamil districts than elsewhere in the presidency. This is what has happened. Birthrate in these districts keeps steadily lower than for the whole province. The deathrate is also lower but not to the same extent. Since the deathrate runs lower it cannot be said that the greater prevalence of cholera in the southern districts is a factor which affects their population, and cholera is not a disease which removes particularly persons in the reproductive stages or lowers the general vitality of the people.

Emigration is undoubtedly one of the chief factors influencing the rate of increase of population and the southern Tamil districts, particularly Trichinopoly and Tanjore, contribute heavily to emigration to Ceylon and Malaya in particular, also to Burma and other regions. Their population therefore should show the results of this drain. At the end of the decade as already mentioned, assisted emigration to Malaya had stopped and Indians in that country had been encouraged to return; Ceylon emigration too had weakened. Consequently the direct effects of emigration on population increase would be less in



Reg. No 48
Copies 1150

MAP III.

Helio-zinco, Survey Office, Madras.
1932.

1931 than at other years. Continuing emigration enters however indirectly into population figures by affecting the birthrate. The emigrants are generally in the most fruitful period of their reproductive life and are mostly from classes among whom the birthrate is higher than in most other social grades. These two factors are cumulative and must tend to lower the birthrate in the areas they affect. Labourers emigrating to Ceylon from Trichinopoly averaged per annum 38,480. The average returns were 25,150. This implies a recurring loss of population of approximately 13,000 persons. The total loss for a decade at this rate amounts to almost 7 per cent of the 1921 district population. Allowing for this, Trichinopoly might be said to have a virtual increase of 7·5 per cent which brings it up near presidency level.

Apart from questions of emigration, birthrate would probably run lower in these districts than elsewhere in the presidency. It is a matter of general observation the world over that different social divisions correspond to different birthrates, the rate increasing ordinarily as we descend the social scale. This question was exhaustively discussed at the third session of the world Population Conference held at Geneva in 1927. In the social lower grades it is an advantage to have children, for even in their early life they become wage-earners; forethought and consideration for the future are less prevalent. Among higher classes children have to be educated and the parents' desire to see their material standard preserved makes them limit the number of offspring. These southern Tamil districts are really the heart of Tamil Nadu and one of the most advanced and sophisticated regions of the presidency. Education is more diffused; literacy is higher: a larger proportion enter the professions and services and a larger element of the population lives in towns. All these circumstances, since more prevalent in this region than elsewhere in the presidency, should produce for that region a lower birthrate. It would be interesting to compare the size of an average Tanjore family with one in, say, North Arcot or the Godavaris. Statistics do not exist at present however to enable such a determination to be made.

23. Consideration of this question is not complete without a study of Map III which shows variation in density by districts over the decade. Here the broad regions of darker coloration are not very different from those in Map I. Madras leads easily but no true comparison of density is possible between an urban area of 30 square miles and a district of 3,000. This leaves East Godavari plains in undisputed predominance. The Telugu deltas still form one of the darker regions. This time the darker coloration extends up the coast to the Bihar and Orissa frontier. Chingleput, North Arcot and Malabar are other darker zones. The regions of light coloration are the same as in Map I, the northern area being slightly extended and the southern one contracted. The core of each however is unchanged. Map III shows the peculiar development of the Telugu deltas even more than Map I. East Godavari has risen by 82 and West Godavari by 73 persons per square mile. The two maps proceed on different principles. Map I shows a relative and Map III shows an absolute figure, for though it introduces a relationship to area it makes no ratio comparison with previous densities. To gain the fullest impression of the changes that have occurred the two maps should be read together, or rather Maps I, II and III should be studied in succession for any district under observation. Thus the darker coloration in Map III of North Arcot and Malabar when referred to previous high figures takes a lighter hue in Map II and *vice versa* for the Agencies and certain Ceded Districts.

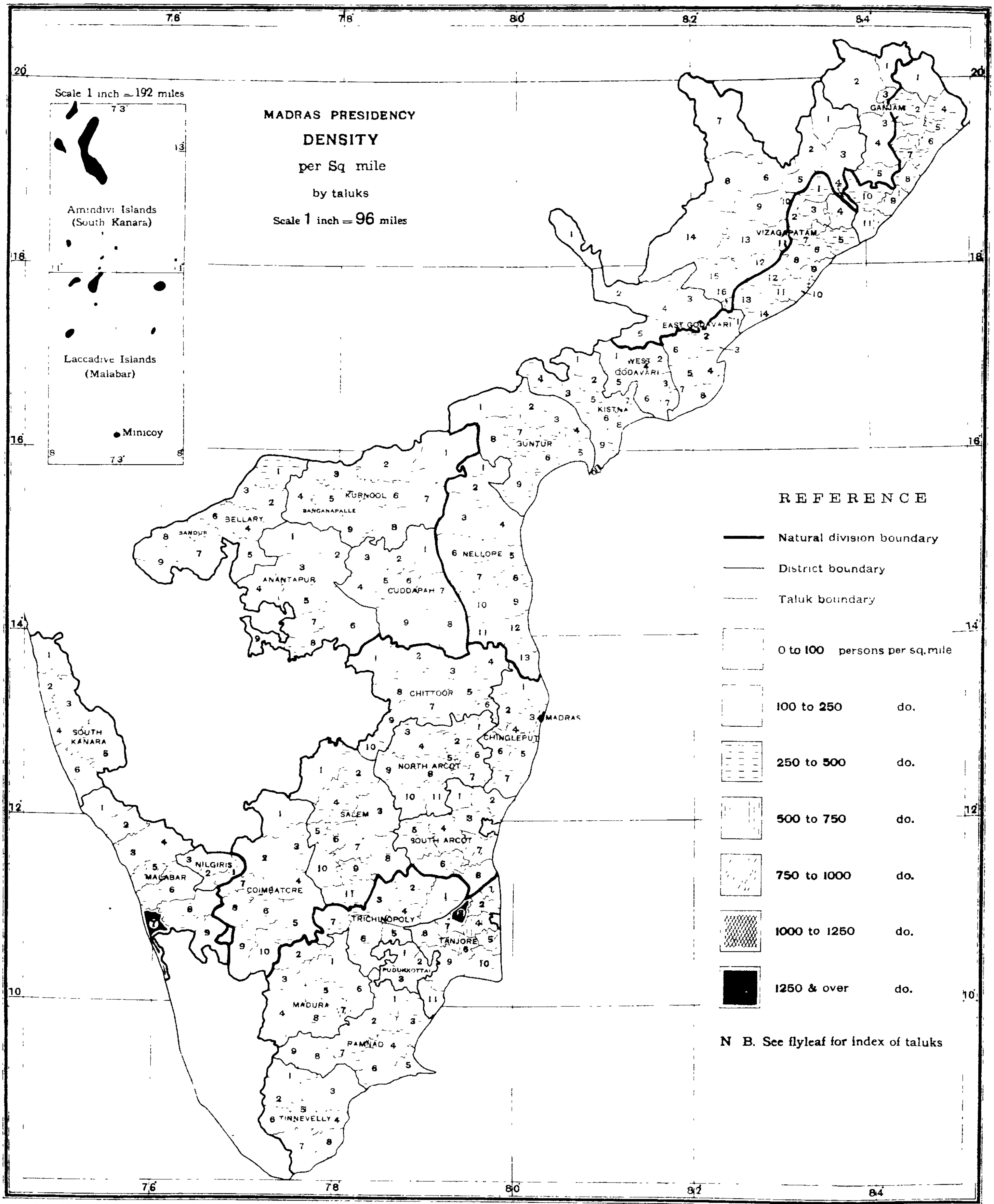
24. Subsidiary Table *v* compares changes in population deducible from birth and death statistics with those ascertained from census enumeration. When, as indicated above, registration of births and deaths is by no means uniformly reliable, no useful deductions can be made when variation is slight either way. Where, however, the difference is pronounced it ought to be referable to broad general causes.

The figures for the province show at first glance that the excess resulting from total births *minus* deaths is less than that derived from a subtraction of census enumerations ; these provincial totals are vitiated by the inclusion of Agency figures for both. Births and deaths are not registered over the greater part of the Agency ; the census however is there as full as anywhere else. To include, therefore, Agency details in both columns is in effect to deduct some unascertainable figure from the first total. Before provincial comparison can be begun, the Agency contributions should be removed from both. This leaves the increase in population calculated from vital statistics as 4,379,000 and that from census determinations as 4,174,000. Now the census increase is definitely less. This is what might be expected in a province where emigration is a strong and continuing feature. The table in the margin shows districts in which (*a*) the births *minus* deaths increase and (*b*) the census increase is markedly superior.

(*a*)	
Nellore.	Tanjore.
Cuddapah.	Trichinopoly.
Anantapur.	Madura.
Chingleput.	Tinnevelly.
Chittoor.	Malabar.
North Arcot.	South Kanara.
South Arcot.	

(*b*)	
East Godavari.	Madras City.
West Godavari and Kistna.	Nilgiris.
	Guntur.
Kurnool.	Salem.

On general considerations one would expect a developing region offering marked attractions to immigrants to show the census increase above that of the vital statistics. This applies in a marked degree to the Nilgiris. Where emigration is predominantly male and seasonal the birth *minus* death difference might be expected to be less. This is the case in Vizagapatam, the Godavaris and Guntur. In the majority of districts the determination arrived at by births *minus* deaths is greater than the census increase. The discrepancy is most marked in Nellore, North Arcot, and Trichinopoly and very prominent also in Cuddapah, Anantapur, Chingleput, Chittoor, South Arcot and Tinnevelly. It is noteworthy that the districts contributing most heavily to Ceylon emigration figure in column (*a*) while developing areas such as the Nilgiris, Madras city, the Godavaris and Guntur figure in (*b*). In the latter case, the direction of the difference is what might be expected, for the effects of migration in this are obvious. Salem, though not a developing district in the sense that the Nilgiris is, owes probably its position in column (*b*) to the large influx represented by the Mettur Project. Kurnool's presence in column (*b*) is in interesting contrast to that of its fellow districts Cuddapah and Anantapur in (*a*). It is from the latter two of the Ceded Districts that such emigration as that region yields is most marked whereas Kurnool seems to have attracted visitors ; two of its taluks showed an increase of over 20 per cent. The difference in the Trichinopoly figures is enormous and indicates the extent of its depopulation during the decade, a matter gone into at length elsewhere. The margin is wide also in all the Tamil districts except Ramnad, Coimbatore and Salem. In the last two a considerable immigration offset exists to the emigration drain while the Ramnad movement abroad is essentially seasonal and short-period. Chittoor and the West Coast districts (except the Nilgiris) show also a wide (*a*) margin. All these are areas of emigration and the same could be said of Nellore though more of its emigration is to places within India. Madras city yields a higher (*b*) margin than any other but a city is no proper parallel to the ordinary district in such a matter—or in any other— ; its presence among the districts is an administrative technicality, not a natural phenomenon. Generally speaking, immigration districts should tend to a greater census surplus and emigration districts to a greater vital statistics surplus and on the whole this is borne out by the figures in the table and it is in those districts where the emigration quota is strongest that the vital statistics determination has its greatest superiority.



Reg No 63
Copies 1150

MAP IV.

Helio-zinco., Survey Office, Madras
1932.

Taluk Density map.

INDEX OF TALUKS.

GANJAM AGENCY—
1. Udayagiri.
2. Balliguda.
3. Surada (Pondakhol).
4. Ramagiri.
5. Parlakimedi.

GANJAM PLAINS—
1. Ghumsur.
2. Aska.
3. Surada.
4. Kodala.
5. Chatrapur.
6. Berhampur.
7. Ichapur.
8. Sompet.
9. Tekkali.
10. Parlakimedi.
11. Chicacole.

VIZAGAPATAM AGENCY—
1. Bissamkatak.
2. Rayagada.
3. Gunupur.
4. Palkonda.
5. Parvatipur.
6. Koraput.
7. Naurangpur.
8. Jeypore.
9. Pottangi.
10. Salur.
11. Srungavarapukota.
12. Viravilli.
13. Padwa.
14. Malkanagiri.
15. Gudem.
16. Golgonda.

VIZAGAPATAM PLAINS—
1. Parvatipur.
2. Salur.
3. Bobbili.
4. Palkonda.
5. Chipurupalle.
6. Vizianagaram.
7. Gajapatinagaram.
8. Srungavarapukota.
9. Bimlipatam.
10. Vizagapatam.
11. Anakapalle.
12. Viravilli.
13. Golgonda.
14. Sarvasiddhi.

EAST GODAVARI AGENCY—
1. Nugur.
2. Bhadrachalam.
3. Yellavaram.
4. Chodavaram.
5. Polavaram.

EAST GODAVARI PLAINS—
1. Tuni.
2. Peddapuram.
3. Pithapuram.
4. Cocanada.
5. Ramachandrapuram.
6. Rajahmundry.
7. Razole.
8. Amalapuram.

WEST GODAVARI—
1. Chintalapudi.
2. Kovvur.
3. Tanuku.
4. Tadepalligudem.
5. Ellore.
6. Bhimavaram.
7. Narasapur.

KISTNA—
1. Tiruvur.
2. Nuzvid.
3. Bezwada.
4. Nandigama.
5. Gannavaram.
6. Gudivada.
7. Kaikalur.
8. Bandar.
9. Divi.

GUNTUR—
1. Palnad.
2. Sattenapalle.
3. Guntur.
4. Tenali.
5. Repalle.
6. Bapatla.
7. Narasaraopet.
8. Vinukonda.
9. Ongole.

NELLORE—
1. Darsi.
2. Podile.
3. Kanigiri.
4. Kandukur.
5. Kavali.
6. Udayagiri.
7. Atmakur.
8. Kovuru.
9. Nellore.
10. Rapur.
11. Venkatagiri.
12. Gudur.
13. Polur.

CUDDAPAH—
1. Badvel.
2. Proddatur.
3. Jammalamadugu.
4. Pulivendla.
5. Kamalapuram.
6. Cuddapah.
7. Siddavattam.
8. Rajampet.
9. Rayachoti.

KURNOOL—
1. Markapur.
2. Nandikotkur.
3. Kurnool.
4. Pattikonda.
5. Dhone.
6. Nandyal.
7. Cumbum.
8. Sirvel.
9. Koilkuntla.

BELLARY—
1. Adoni.
2. Alur.
3. Siruguppa.
4. Bellary.
5. Rayadrug.
6. Hospet.
7. Kudligi.
8. Hadagalli.
9. Harpanahalli.

ANANTAPUR—
1. Gooty.
2. Tadpatri.
3. Anantapur.
4. Kalyandrug.
5. Dharmavaram.
6. Kadiri.
7. Penukonda.
8. Hindupur.
9. Madakasira.

MADRAS :

CHINGLEPUT—
1. Ponneri.
2. Tiruvallur.
3. Saidapet.
4. Sriperumbudur.
5. Chingleput.
6. Conjeeveram.
7. Madurantakam.

CHITTOOR—
1. Madanapalle.
2. Vayalpad.
3. Chandragiri.
4. Kalahasti.
5. Puttur.
6. Tiruttani.
7. Chittoor.
8. Punganur.
9. Palmaner.
10. Kuppam.

NORTH ARCOT—
1. Arkonam.
2. Walajapet.
3. Gudiyattam.
4. Vellore.
5. Arni.
6. Cheyyar.
7. Wandiwash.
8. Polur.
9. Tiruppattur.
10. Chengam.
11. Tiruvannamalai.

SALEM—
1. Hosur.
2. Krishnagiri.
3. Harur.
4. Dharmapuri.
5. Mettur.
6. Omalur.
7. Salem.
8. Attur.
9. Rasipur.
10. Tiruchengodu.
11. Namakkal.

COIMBATORE—
1. Kollegal.
2. Gobichettipalayam
3. Bhavani.
4. Erode.
5. Dharapuram.
6. Palladam.
7. Avanashi.
8. Coimbatore.
9. Pollachi.
10. Udumalpet.

SOUTH ARCOT—
1. Gingee.
2. Tindivanam.
3. Villupuram.
4. Tirukkoyilur.
5. Kallakurichi.
6. Vriddhachalam.
7. Cuddalore.
8. Chidambaram.

TANJORE—
1. Shiyali.
2. Mayavaram.
3. Kumbakonam.
4. Nannilam.
5. Negapatam.
6. Mannargudi.
7. Papanasam.
8. Tanjore.
9. Pattukkottai.
10. Tirutturaippundi.
11. Arantangi.

TRICHINOPOLY—
1. Udaiyarpalaiyam.
2. Perambalur.
3. Musiri.
4. Lalgudi.
5. Trichinopoly.
6. Kulittalai.
7. Karur.

MADURA—
1. Dindigul.
2. Palni.
3. Kodaikanal.
4. Periyakulam.
5. Nilakottai.
6. Melur.
7. Madura.
8. Tirumangalam.

RAMNAD—
1. Tiruppattur.
2. Sivaganga.
3. Tiruvadanai.
4. Paramagudi.
5. Ramnad.
6. Mudukulattur.
7. Aruppukkottai.
8. Sattur.
9. Srivilliputtur.

TINNEVELLY—
1. Sankaranayinarkovil.
2. Tenkasi.
3. Kovilpatti.
4. Srivaikuntam.
5. Tinnevelly.
6. Ambasamudram.
7. Nanguneri.
8. Tiruchendur.

NILGIRIS—
1. Coonoor.
2. Ootacamund.
3. Gudalur.

MALABAR—
1. Chirakkal.
2. Kottayam.
3. Kurumbranad.
4. Wynad.
5. Calicut.
6. Ernad.
7. Ponnani.
8. Walluvanad.
9. Palghat.

SOUTH KANARA—
1. Coondapoor.
2. Udipi.
3. Karkal.
4. Mangalore.
5. Puttur.
6. Kasaragod.

PUDUKKOTTAI STATE—
1. Kolattur.
2. Alangudi.
3. Tirumayam.

BANGANAPALLE STATE—

SANDUR STATE—

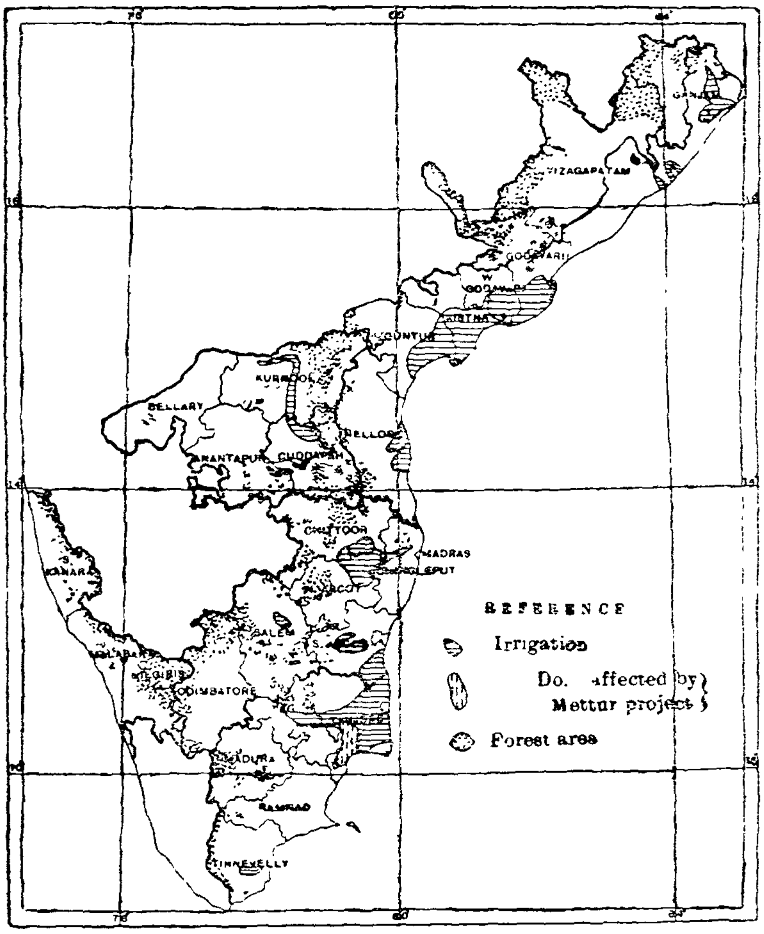
Laccadive Islands (Malabar district) and Amindivis (South Kanara district) are shown in the panel.

British Cochin and Anjengo and Tangasseri have not been shown.

Density by taluks.

25. Maps I–III have the district as the unit. Obvious limitations attend upon this where questions of density are concerned, for a unit ranging between 3,000 and 9,000 square miles can hardly escape departures from homogeneity. Map IV has therefore been drawn on the taluk as basis. The taluk is in many ways the real administrative unit and is on the whole homogeneous. Even it however is at best only an approximation and it is essential in studying a density map to bear in mind the details shown in the key map and the small plan shown in the margin which indicates distribution of irrigation and forest areas and of hills. Wide differences in density may exist between taluks in the same district which are not explainable by differences in fertility, rainfall, etc., but by, e.g., the fact that a large portion of one taluk is occupied by forest. Cultivable area is really the criterion but it is not practicable to work out this by taluks in compendious form for inclusion in this report. Density figures should always be read in conjunction with other information bearing on conditions of the area.

Irrigation and Forests.



Agency

26. In Ganjam Agency the north and south tips have a much higher density than the centre and the central fringe. The Parlakimedi Maliahs in the extreme south with 196 persons to the square mile have a density greater than that of not a few plains taluks in the presidency. This is an illustration of the impression one receives that the Saora Agency is much more densely populated than the Kond. In the Agency denser population is to be found in proximity to important communications. Udayagiri and Parlakimedi Maliahs illustrate this aspect. The former surrounds the Boad Road which in one form or another has for ages been a through route to Sambalpur for the salt of the Circars coast. Parlakimedi Maliahs cover the last stage of the southern exit from the Agency to its southern focal point in the plains, Parlakimedi. The same tendency is observable in the Vizagapatam Agency, where densities over 100 are found in Jeypore, Koraput, Pottangi, Parvatipur, Rayagada and Gunupur. The first three of these carry the main road from the plains through into Bastar State. The second group lie on the two great lines of penetration from the south which follow the river valleys of the Nagavalli and Vamsadhara. Taluks which come close to the 100 are Naurangpur and Padwa of which the first comes next in the matter of proximity to main communications. It is on the fringes of this Agency that the lowest densities are recorded. From Malkanagiri round to Salur the density nowhere exceeds 40. In some of these fringes the population has hardly increased at all since 1921—in two parts it has decreased.

The distribution of population in the Godavari Agency is much the same as in 1921, Polavaram being twice as high as its nearest successor. This taluk is on the south bank of the Godavari and has a considerable area not very distinguishable from the adjoining plains tracts.

East Coast North.

27. Ganjam plains show a distinct growth in density from inland towards the coast. Ghumsur with 220 passes into Kodala with 390 and then Chatrapur with 632 persons per square mile. Surada with 176 passes into Aska with 333, Ichapur with 363 and Berhampur with 536. The highest densities are found on the coast. Chicacole is no longer the most densely populated taluk, for Tekkali now occupies that position with 637 persons per square mile. Chatrapur is the taluk of the most notable increase for it reached 17 per cent over the decade and was the only taluk to show an appreciable increase in 1911–21, when most Ganjam taluks showed a decrease. The three taluks with over 600 persons per square mile are adjacent to the lower reaches of the three main rivers of Ganjam and the same applies to Berhampur which has 536 per square mile. Chatrapur and Berhampur contain most of the area protected by Rushikulya irrigation. The low densities recorded from Ghumsur and Surada do not reflect infertility, absence of rainfall or other fundamental cause of difference ; these taluks contain nearly all the forests of sal for which the district is famous. In Vizagapatam the tendency is for density to increase from inland towards the coast and a coastal taluk on this occasion returns the highest figure. This is Vizagapatam, which now contains 767 persons to the square mile. Palkonda whose fertility is indicated by its name ('pot of milk') now is second with 726 per square mile. This taluk receives the benefits of a river irrigation system. Foothill taluks seem often to suffer in population and a thinner population belt runs down in the shadow of the ghats.

28. With the two Godavaris, Kistna, and Guntur, we come to one of the most characteristic areas of Madras Presidency and the heart of Andhradesa. The first three districts and the eastern part of Guntur may be said to consist of river deltas. Land is valuable and as a consequence locomotion is difficult, for on the embanked roads at cultivation time every form of human activity takes place. The buffaloes move in serried but undependable masses ; the children play, the elders talk—and frequently sleep. The irrigation system of these deltas is much more modern than that of Tanjore and allows of navigation in the main canals, and reminiscence brings up pictures of great barges with enormous half-filled sails dropping lazily down the canal in the shade of the tall trees lining the bank. Life and increase here are a function of irrigation. Not all the taluks in these districts are commanded by delta irrigation and the map shows in a marked way how density and wet cultivation go hand in hand. One delta taluk, Tanuku in West Godavari, exceeds 1,000 in density and Ramachandrapuram in East Godavari touches 953. Four others exceed 800 and four are between 600 and 800. Densities round the Godavari run higher than those round the Kistna, and the disparity between the delta and upland taluks in respect of density is greater also. The difference between highest and lowest in East Godavari is 600, in West Godavari 900, in Kistna 400 and in Guntur 700. The inland taluks of Guntur district belong in fact to a totally different region from their coastal neighbours. The stony wastes of Vinukonda and Palnad have much more in common with the Deccan than with the coastal tracts in climate and circumstances and their almost equal densities of 162 and 161 as compared with Tenali's 870 or Repalle's 518 reflect this separation.

Nellore district, though included in the East Coast North division, is very different in many ways from its more northerly neighbours. Of its 13 taluks only two exceed 300 persons per square mile and these two are in the neighbourhood of the irrigation system at the mouth of the Pennar river. No fewer than eight fail to reach 200 persons per square mile and four are actually below the density recorded from the Parlakimedi Agency tracts of Ganjam Agency. The inland taluks return the lowest densities. These run along the Eastern Ghats and contain a certain amount of forest.

The inclusion of this district in the East Coast North division is one of the less 'natural' associations in that system. From a climatic point of view most of it falls in the no man's land which receives an uncertain supply from both monsoons and although it lies at a lower elevation and on the opposite side of the Eastern Ghats it has much in common with its Deccan neighbours on the west. Strictly speaking, the East Coast North division should stop with Guntur and most of Nellore should be added to the Deccan to complete the belt of uncertain rainfall which thrusts inward from the great bend in the Coromandel Coast.

29. Taluk densities in the Deccan division run practically all between 100 and 250 persons per square mile. The higher figures generally occur in taluks housing a district headquarters or other important town. Examples are Kurnool, Adoni, Bellary and Hindupur. In Cuddapah, there is a good deal of reserved forest in the eastern taluks which run along the ghats and the higher densities come from the central taluks of Cuddapah, Kamalapuram and Proddatur which are fertile and served by the Kurnool-Cuddapah canal. Kurnool district returns two taluks with density below 100, Nandikotkur and Markapur. These taluks however include vast stretches of forest and the low density figure is misleading, as an indication of the actual proximity of population. Not that the inhabited area could in any case be termed densely populated ; but figures below 100 are distinctly unrepresentative. **Deccan.**

Taken as they stand however the comparative uniformity of the taluk figures for these districts and their low average give an indication of the nature of the country and bear out the impression one receives in traversing it that human beings are scarcer here than elsewere in the presidency.

30. The districts of the East Coast Central division show an increase in average density as we go south. Saidapet taluk in Chingleput now has over 1,000 persons to the square mile but this taluk contains much that is really Madras city suburbs and its urban aspect is pronounced. The taluks of Chingleput diminish in density as one goes farther from Madras. The southern taluks of Chittoor are more densely populated than the north and the taluk on the Mysore plateau, Palmaner, is the least populous of all with 145 persons to the square mile. Chittoor district differs markedly from its eastern and southern neighbours and is a transition belt between the Deccan and the more favoured southern districts. The highest taluk density it records is 495 in the extreme south and it has 5 taluks below 200. Chingleput's lowest return is 359 and North Arcot has only one below 300. The heavier densities of North Arcot are in the north and north-east of the taluk, i.e., towards the Palar valley. On the other side lie the most densely populated of the Chittoor taluks ; communications and irrigation again have their influence here. Tiruvannamalai taluk shows a great increase in density from 1921 but this merely reflects the fact that the 1921 taluk included large amounts of hill and jungle which now form a separate taluk under the name of Chengam and return the lowest density of the district. Salem and Coimbatore are alike in that each has one taluk much superior in density to any other and in each case this corresponds to that which contains the district headquarters. Apart from these rather unrepresentative taluks the range is very similar. Kollegal returns less than 100 but this taluk belongs to the Mysore plateau and contains much forest. The other taluks of 300 or below are Bhavani, Gobichettipalayam and Udumalpet, all heavily forested in parts. The extreme south of the district opposite the Palghat gap advances steadily in density and Pollachi taluk now has over 400 to the square mile. Salem's taluk on the Mysore plateau, Hosur, returns the lowest density. Much of this however is forest. The same applies to the feverish Baramahal taluk of Harur. In South Arcot as in other East Coast districts population density tends to diminish as we leave the coast. Chidambaram and Cuddalore are both over 800 while the most inland taluk—Kallakkurichi—is 375. This is the least diverse of the districts in this division in its taluk composition, there being no taluk with a density below 375. **East Coast Central.**

East Coast South.

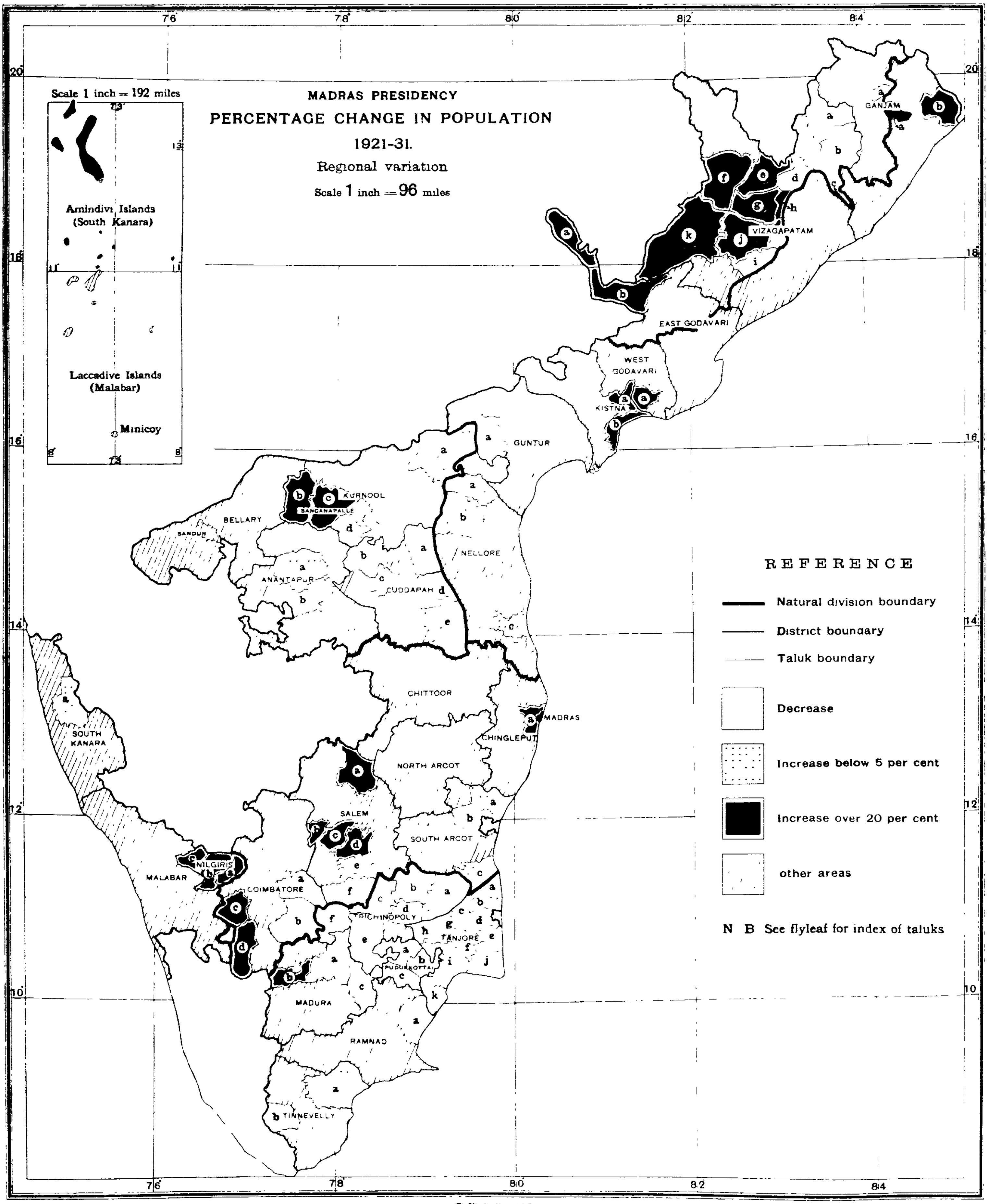
31. Tanjore could be divided into two areas, delta and non-delta. Density differences reflect this. Kumbakonam reaches 1,300 accounted for largely by the presence of a considerable city within it. The lowest density in the purely delta taluks is 730. The transition taluks go down to 667 in Mannargudi while the purely dry taluks go down to 278 in Arantangi. Tanjore like the Telugu deltas shows how irrigation and population density go hand in hand. The metropolitan taluk of Trichinopoly district returns a density nearly twice the next highest. Apart from Trichinopoly taluk however the range is only 200 between the rest. The peculiar features of the variation of population in this area are dealt with elsewhere. The taluks of highest density in this district lie to the east and adjoin the Kaveri river. Madura returns one taluk over 1,000, again the metropolitan taluk. The others, apart from Kodaikanal which is not representative, range over less than 200, the highest being Nilakkottai. Ramnad has no metropolitan aggregation to disturb its taluk densities and the range over the nine taluks is only 250. The two highest figures, 536 and 466, both come from the western projection of the district between Madura and Tinnevelly, the lowest figures come from the south and east on the coast. The attraction of the fertile Tambraparni valley is indicated by high taluk densities, the highest, 734, coming from Tiruchendur which occupies the south-east corner and has the river for its northern boundary. Ambasamudram's figure of 413 would be much higher if forested area were left out of account. Tenkasi, another favoured area in fertility is also an important communication centre as it covers the approach to the second of the natural passes through the Western Ghats, Shencottah. Its importance has been increased by the opening during the decade of the S.I.R. chord line from Virudhunagar. The lowest densities come from extreme north-east and south-west, Koilpatti and Nanguneri, respectively. These are dry areas with uncertain rainfall.

West Coast.

32. Malabar taluk densities require some comment. The enormous figures for Cochin, 12,000 odd, is accounted for by the fact that this taluk consists of very little more than Cochin municipality. Ponnani and the Laccadive Islands both exceed 1,000, the latter getting above 1,500. Calicut has 918 but includes the headquarters city with a population of almost a lakh. The lowest density comes from Wynaad, an inland area of hills, forests and plantations. The next lowest are Ernad and Walluvanad, both in the south of the district and both containing much forest. Much of Malabar is occupied by hills and by water and if it were possible to make a detailed examination of some coastal stretches and omit all hills and water the density results would be surprising. The Aminidivis in South Kanara return a density of 1,700. The southern and central coast taluks of the mainland are much above the rest and the headquarters taluk as usual is influenced considerably by the presence of a city, Mangalore within it.

33. Subsidiary Table *vi* gives another view of density trend and may be said to illustrate and explain Subsidiary Table *ii* in its population aspect. It will be noted that regions of greatest percentage increase in the last decade are those of least and greatest density and the lowest increase is from the central class 300–450. This is particularly brought out by the figures for East Coast South where the most scantily peopled taluks have increased by 20 per cent and those of average density by only 2 or 3 while the taluks of density over 750 show the next largest rate of increase.

The West Coast also illustrates this feature in a marked way. A large increase of 36 per cent in areas under 100 density is referable to the Nilgiris and 18 per cent increase in the most dense areas is a result of a remarkable combination of dense population and large increase returned from the island and coastal taluks of Malabar. The Deccan here as always follows a line of its own and shows rates diverging much less than in other natural divisions. This illustrates once more the uniformity of conditions obtaining over this region. The largest increase in the East Coast Central division is not in the lowest class but in the lowest but one, but again the second highest rate comes from the most densely peopled areas.



Reg. No 73
Copies 1150

MAP V.

Helio-zinco., Survey Office, Madras.
1932.

(Regional variation.)

INDEX OF TALUKS.

GANJAM AGENCY—
- *a.* Surada.

GANJAM PLAINS—
- *a.* Surada.
- *b.* Kodala.

VIZAGAPATAM AGENCY—
- *a.* Bissamkatak.
- *b.* Gunupur.
- *c.* Palkonda.
- *d.* Parvatipur.
- *e.* Koraput.
- *f.* Jeypore.
- *g.* Pottangi.
- *h.* Salur.
- *i.* Viravilli.
- *j.* Padwa.
- *k.* Malkanagiri.

EAST GODAVARI AGENCY—
- *a.* Nugur.
- *b.* Bhadrachalam.

WEST GODAVARI—
- *a.* Bhimavaram.

KISTNA—
- *a.* Kaikalur.
- *b.* Bandar.

GUNTUR—
- *a.* Vinukonda.

NELLORE—
- *a.* Podile.
- *b.* Kanigiri.
- *c.* Gudur.

CUDDAPAH—
- *a.* Badvel.
- *b.* Jammalamadugu.
- *c.* Kamalapuram.
- *d.* Siddhavattam.
- *e.* Rajampet.

KURNOOL—
- *a.* Markapur.
- *b.* Pattikonda.
- *c.* Dhone.
- *d.* Koilkuntla.

ANANTAPUR—
- *a.* Anantapur.
- *b.* Dharmavaram.

CHINGLEPUT—
- *a.* Saidapet.

SALEM—
- *a.* Krishnagiri.
- *b.* Mettur.
- *c.* Omalur.
- *d.* Salem.
- *e.* Rasipur.
- *f.* Namakka

COIMBATORE—
- *a.* Erode.
- *b.* Dharapuram.
- *c.* Coimbatore.
- *d.* Pollachi.

SOUTH ARCOT—
- *a.* Tindivanam.
- *b.* Villupuram.
- *c.* Chidambaram.

TANJORE—
- *a.* Shiyali.
- *b.* Mayavaram.
- *c.* Kumbakonam.
- *d.* Nannilam.
- *e.* Negapatam.
- *f.* Mannargudi.
- *g.* Papanasam.
- *h.* Tanjore.
- *i.* Pattukkottai.
- *j.* Tirutturaippundi.
- *k.* Arantangi.

TRICHINOPOLY—
- *a.* Udaiyarpalaiyam.
- *b.* Perambalur.
- *c.* Musiri.
- *d.* Lalgudi.
- *e.* Kulittalai.
- *f.* Karur.

MADURA—
- *a.* Dindigul.
- *b.* Kodaikanal.
- *c.* Melur.

RAMNAD—
- *a.* Tiruvadanai.

TINNEVELLY—
- *a.* Koilpatti.
- *b.* Ambasamudram.

NILGIRIS—
- *a.* Coonoor.
- *b.* Ootacamund.
- *c.* Gudalur.

SOUTH KANARA—
- *a.* Karkal.

PUDUKKOTTAI STATE—
- *a.* Kolattur.
- *b.* Alangudi.
- *c.* Tirumayam.

This subsidiary table and particularly section (*b*) show that during the decade the areas with most increase in density were those in which the inhabitants were least or most crowded. The areas above the mean density observe a similar mean in increase.

34. The taluk density map will serve as an exposition of the matter contained in Subsidiary Table *ii*. Comparing this with the corresponding table of 1921, we observe a shifting upwards of the mode ; the tendency is for greater densities to gain ground ; this with general increase of population is inevitable. The general nature of the tables has not however altered greatly. A third of the province's area and half its population are still found in regions with density 300–450. The Agency produces on this occasion a small area of high density. This represents the small tip in the extreme south-east attached to the Golgonda plains taluk. The West Coast has no longer any taluk with a density below 100. This fact is well brought out by the map. The East Coast Central division alone now has a representative in every class. Figures show that the favourite density for the Agency is under 100, for the Deccan 100–150, for East Coast North 300–450, East Coast South 300–450, East Coast Central 450–600 and West Coast 450–600. This shows the East Coast Central division as possessing the most evenly distributed population with regard to density and in many ways this central band could be taken as the presidency average from which divergence occurs on either hand.

Area and population percentage keep fairly close to each other. The greatest divergence is as might be expected in the upper range, for taluks large in area are not commonly dense in population. Hence the wide divergence in the West Coast where some small taluks reach densities over 1,000 and so contribute to the population an element quite disproportionate to their area.

The proximity in yards of the population which may be taken as the inverse of the density has been taken out for the various natural divisions and one or two typical districts. This like all density statements is illustrative rather than descriptive and should serve only that limited purpose. While in the Deccan and the Agency, a man could have considerably over a hundred yards between him and his neighbour he would have considerably less in the other three divisions. When taluks are taken an effective comparison is produced by the 306 yards for Malkanagiri and the 42 for the Aminidivis. It is interesting to observe how closely the figures for the three southern divisions and the East Coast North approximate.

35. The increase in the natural population is 10·8 as against 10·3 in the actual numbers recorded. Considering the number of Madrasis abroad or at sea for whom no figures have been obtained, the increase in natural population might be expected to be less than that of the actual record and the closeness of the approximation is noteworthy. Every attempt was made to obtain figures of Madrasis in other lands ; Fiji, Seychelles, Mauritius, Ceylon, the Straits Settlements, as well as the other provinces of India were approached for information.

Variation by taluks.

36. Neither for variation nor for density is the district the most illustrative unit. Taking the taluk as the unit, a survey of population variation gives a more accurate delimitation of the areas which differ markedly from the general presidency run. Map V opposite illustrates the chief differential features. The principal general facts which emerge are :

(i) On the whole those areas which suffered the greatest diminution over 1911–21 show greater percentage rises over 1921–31. This is a not unusual phenomenon.

(ii) There is a marked regional difference in the Vizagapatam Agency, the high agency returning heavy increases, the lower agency, consisting of the Vamsadhara and Langulya upper valleys, returning a very small increase and in one taluk—Gunupur— an actual decrease.

(iii) A belt of lower increase and density is found corresponding to the Eastern Ghats where they separate the Ceded Districts from Nellore and Guntur.

(iv) A belt of actual decrease is seen to extend north-westwards from the coast below Point Calimere across Pudukkottai up to Namakkal in Salem.

(v) Taluks containing large towns generally figure among the heavier increases.

A brief description by districts follows.

Northern Circars.

37. The increase is greater in the northern and eastern parts of the Ganjam Agency than in the remainder. This has no apparent connection with density but the areas correspond respectively to the Kond and Saora regions. The small Pondakhol section returns a decrease. In Ganjam Plains the northern taluks, mainly Oriya, return heavier rates of increase than the southern, mainly Telugu. They had with the exception of Chatrapur heavier decreases in 1911–21. The steady progress of Chatrapur, which ranks high in density, is remarkable. The coastal taluks of Ganjam contribute largely to Burma emigration. As a result of the anti-Indian riots in Rangoon in 1930, the number of returning emigrants was much larger than usual. To this fact is attributed in part the higher.increase in these taluks. Surada shows a 23 per cent increase which may reflect part of the decrease in Pondakhol which adjoins it. Vizagapatam Agency returns some remarkable figures of increase from taluks of low density, Padwa approaching 50 per cent and Malkanagiri exceeding 40. Some of these are so empty that a large percentage of increase represents not a very great addition to population. This Agency may be divided into three broad zones (*a*) the plateaus, consisting of the territory sloping towards the Central Provinces in and beyond the Ghats, (*b*) the low level agency consisting essentially of the valleys of the Langulya (Nagavalli) and Vamsadhara rivers, and (*c*) the fringes. These last are foothills and lower slopes of the Ghats attached administratively for convenience to the plains taluks below and are regions of low density and small total population. In (*a*)the increases are heavy, in (*b*) they are slight, and in (*c*) they fluctuate considerably from 47 per cent diminution to 71 per cent increase. Gunupur taluk shows a decrease of 1 per cent over the decade. Over 1911–21 it showed a decrease of 0·1 per cent and thus for twenty years its population has remained practically unchanged. Gunupur is a Saora area and Saoras have gone in later years in large numbers to the tea gardens of Assam. It and Rayagada are among the more densely populated taluks of Vizagapatam Agency. It is difficult to understand why the Viravilli foothills should have diminished by 47 per cent and the Palkonda strip increased 71. Although the original total numbers involved are small in each case (c. 10,000) the percentages are so large as to deserve attention. It may be that the 'fituri' or rebellion of 1922–24 which ranged through the southern foothill agencies affected their population adversely. In the Godavari Agency the two upper river taluks Bhadrachalam and Nugur show much higher rates than the others, both increasing by 25 per cent. Bhadrachalam had a 10 per cent decrease over 1911–21. The most densely populated taluk returned the lowest increase.

The greatest increase in the Vizagapatam Plains comes from the headquarters and densest taluk and reflects the harbour, university and other developments in the decade. Increase tends to be rather greater towards the coast but shows no particular connection with density. The delta regions in East and West Godavari, Kistna and Guntur show interesting variations. Round the Godavari the tendency is for the heaviest increase to come from the less populous taluks. In the Kistna delta the reverse is the case. This possibly reflects the fact that the average density round the Kistna river is below that round the Godavari and there is more room for growth. The upland regions of East Godavari have a higher increase than the delta. The reverse obtains in West Godavari, Kistna and Guntur. Kaikalur taluk is in the peculiar position of having a large part of its surface occupied by water, the Kolair lake falling within this

taluk. The varying level of this sheet of water has produced habitation problems in the past but the tendency is for greater settlement to be made in Kaikalur and this has found expression in a 30 per cent increase. In Guntur the inland taluks bordering on Kurnool and Nellore return much lower increase rates, Vinukonda's being only 3·7. In this district density and rate of increase are in almost direct proportion. The adjoining taluks of Kurnool (Markapur, 1·6), of Nellore (Podili, 3·9 and Kanigiri, 4·8) and of Cuddapah (Badvel, 3·4 and Siddhavattam, 3·5) are also well below the average for their districts. This area is low in density as in growth and is one of the regions least favoured for habitation in the presidency. Lower rates of increase and density continue down both sides of the Ghats which separate Nellore from Cuddapah and are observable, though much less pronounced, in the corresponding regions in Chittoor and Chingleput. Movement of population within the Guntur district has contributed both to the lower increase in the inland and the higher in the coastal taluks. Life is hard in Vinukonda and its neighbours while the other taluks and notably Guntur are prosperous and healthy. Guntur is the centre of a tobacco industry of considerable size. Other industries are developing there, notably cotton and rice. There is a considerable cattle trade and all over, the taluk offers considerable inducements to the inhabitants of its less fortunate neighbours. In this as in other taluks round the Kistna river the decade has seen a good deal of settlement of depressed classes on the land and this fact has contributed in some measure to the marked growth in population.

38. In the Ceded Districts, two taluks of Kurnool increased over 20 per cent and one of Anantapur reached 18·8. These three taluks (Pattikonda, Dhone and Gooty) adjoin each other and form a compact area not far from the geographical centre of the districts. All three suffered considerably in 1911–21. Banganapalle State shows almost the same figure in 1921–31 as it did for 1911–21 with however the sign altered. It may therefore be said to have made up lost ground but no more. Sandur on the other hand has 3 per cent in hand over 1911–21. The greater increase in the western taluks of Bellary is to some extent factitious as large numbers of visitors had come from over the border at the time of census for business or amusement to a well-known cattle fair. The population of this Kuruvatti village rose on this account by 2,112 or 136 per cent over its 1921 figure. The increase is less in Hospet taluk than in others. This taluk actually showed a decrease in the two previous decades. The Tungabhadra irrigation channels on which the prosperity of the taluk depends cannot be kept clear of mosquitoes without a much greater expense of money and energy than has so far been made, and to this cause the Collector attributes the lower rate of increase despite prosperity during the decade. Chingleput's variation could be reduced to the statement: the farther from Madras the less the density, the slower the growth. Saidapet with 23 per cent had almost the same increase as the presidency town of which much of it is really suburb. Chittoor's western and less populous taluks which border on Mysore return the higher increases. They were the greatest sufferers in 1911–21. The increase in Kuppam and Palmaner taluks is to some extent due to a large cattle fair held in that region at census time. The Collector informs me also that the Kolar Gold Fields recruit a considerable element of their labour force from Palmaner taluk, a large proportion of whom had at census time returned to their homes on account of unfavourable conditions in the mines. The growth in North Arcot is more rapid in the centre and the south but the range is not so pronounced as in many other districts, e.g., Salem, which returned taluk variations ranging between + 36·7 per cent and — 2·0 per cent. The greatest increase comes from the metropolitan taluk and is closely connected with the 95% increase in population of Salem city of which the 1921 census was completely vitiated by a plague exodus. The opening of the Salem-Vriddhachalam railway has had something to do with the development of population in Salem taluk. The enormous increase in Mettur taluk, 73·8 per cent, is factitious as the thousands of workers engaged on the Mettur dam are now found in an area which was practically uninhabited ten years ago. Namakkal, on the Trichinopoly border, a taluk of density above the district average, decreased by 2 per cent in the decade ; its denser neighbours

Centre.

Rasipur and Tiruchengode increased by only 4 and 5 per cent respectively. The south-eastern taluks of the district represent the area of low increase or of decrease while the north-west return increases of 20 per cent.

South. 39. These south-eastern taluks which contribute largely to Salem's emigration figures are closely connected with the area of decrease in Trichinopoly, where there is a greater disparity between the district and taluk representations than in other cases. The district figure shows 0·5 per cent increase over the decade. The taluk figures show that only two taluks returned an increase at all and that one of these, the small headquarters taluk, registered no less than 14 per cent. Part of this increase must be attributed to the creation of the new railway town of Golden Rock and to greater coincidental aggregation near the city itself. Udayarpalaiyam, the only other taluk in the district to return an increase, rose only 1·9 per cent. The remaining five taluks returned decreases ranging from 0·5 to 6·4 per cent. The highest decrease was in Musiri which adjoins Namakkal in Salem. Emigration from the district is predominantly from these western taluks. In Coimbatore the eastern taluks which adjoin Trichinopoly and Salem give markedly lower increases than the others. Thus Dharapuram's register was only 1·2 and Erode's 4·7 as against the 29 per cent of Pollachi and the 21 per cent of Coimbatore. Pollachi occupies a position of much strategic and commercial importance. Its communications have greatly developed during the decade and its importance is growing steadily. South Arcot returns the lowest range of variation of any district in the presidency. Tindivanam has the smallest increase with 2·8 per cent. This was largely due to the very destructive cyclone which visited it at the end of 1930 and caused widespread damage to property and crops. The same applies to Villupuram and Chidambaram, the figures of which are below the others. In Tanjore district too, taluk figures differ considerably from the district representation, for they show that the dry and thinly populated taluks in the south decreased or barely increased at all. They illustrate Negapatam's decline consequent upon the diminished importance of its big town and show Shiyali taluk with a much lower rate of growth than the others in the delta region. Shiyali adjoins Chidambaram in South Arcot and suffered considerably with it in the 1930 cyclone. The decrease in Arantangi reached 6 per cent while neighbour Pattukkottai was able to increase by a bare 0·6 per cent only. In Pudukkottai State all three taluks decreased ; the heaviest decreases lay on a line running north-westwards from Arantangi to Namakkal, Tirumayam, which lies to the south of this line and is less sparsely populated, returning only 0·3% fall against the 12 and 7 per cent of the other two taluks of the State. In Madura district, neither Kodaikanal nor Madura taluks are representative and their increases of 20 per cent may be taken as not unlikely in hill areas opening to settlement and in the home taluk of a large and growing city. Elsewhere the Melur figure of 1·9 per cent occasions some surprise, as the development of Periyar irrigation in that taluk might have been expected to lead to a greater growth. This taluk has the lowest density of the district (excluding Kodaikanal) and adjoins the decrease belt in Pudukkottai above mentioned. Agricultural labour goes from this taluk to Madura and Nilakottai for harvest work in January and February each year. Consequently some must have been enumerated in those taluks. There was a considerable amount of emigration from Melur in the last years of the decade on account of poor seasons. The 1921 figures for Periyakulam underrepresent the actual population as many people had left the taluk on account of plague. Ramnad figures vary little with the exception of Tiruvadanai which with 2·6 per cent increase is considerably below the others. Tiruvadanai is on the coast and one of the most thinly peopled areas in the district, where communications are few and difficult. In Tinnevelly one is struck by the very low growth of Koilpatti, the black soil taluk in the north, and of Ambasamudram, the fertile taluk of the upper Tambraparni. Growth in Ambasamudram seems regularly slow as the increase over 1911–21 was much below that in any other taluk except Tiruchendur. Koilpatti too in 1911–21 returned a lower increase than the others and is the least populous of Tinnevelly's taluks.

Figures (see margin) supplied by the Ceylon Emigration Commission show that their recruiting depots at Arantangi, Musiri, Namakkal, Perambalur, Turaiyur and Pudukottai contributed almost half the total estate emigrant labour registered for Ceylon in the months of January and February 1931. These centres all lie within the area of decreased population shown in Map V. The same stations contributed in 1930 no less than 84 per cent of the estate labour sent to the island, with a total number of 77,916, Namakkal and Turaiyur in themselves contributing a third of this total. This is an indication of the constant emigration drain from this area and a sufficient explanation of the decrease in population recorded.

Arantangi	4,469
Musiri	7,350
Namakkal	10,989
Perambalur	7,183
Pudukkottai	3,730
Turaiyur	10,625
Total	44,346
Total (all depots)	92,290

The Trichinopoly contingent of 10,786 has not been shown in the list as Trichinopoly itself is not in a decrease area. Inevitably, however, some of the emigration from adjoining taluks returning a decrease must have passed through the Trichinopoly depot and the effective contribution of the decrease area shown in white in Map V is even greater than indicated by the figures in the table. The increase in Melur taluk was very small and the Madura contribution to Ceylon of 8,942 represents some at least of the missing population. It is noteworthy that the taluks in Salem to give small positive increases, either contained Ceylon emigration depots, e.g., Attur, or were in close proximity to such, e.g., Tiruchengode to Erode.

West.

40. The Nilgiris taluks call for no comment beyond that Gudalur, the only one to show a decrease in 1911–21 shows the highest increase now. Malabar shows remarkable uniformity in so large a district with such varied conditions. The Ponnani strip which has a density now of 1,471 per square mile actually succeeds in registering the highest rate of growth during the decade with the exception of the metropolitan taluk of Calicut. This narrow belt of sand, backwaters and coconuts leads one straight into the corresponding regions of Cochin and upper Travancore where increases of 20 per cent and more are the rule. The least representative areas of this district returned the lowest growth, Palghat, which has much in common with Coimbatore, and Wynaad a thinly populated transition region between the western littoral and the Nilgiris plateau. In South Kanara the most remarkable increase is in the Amindivi Islands which despite very considerable congestion indicated by a present density of 1,767 show a 27 per cent increase over the decade. On the mainland, the inland taluks show slower growth than those on the coast and the south has grown faster than the north. Kasaragod taluk is said to have been unusually prosperous during the decade as a result of the higher prices of forest produce. The Kanara coast taluks show a steadily decreasing rate of growth as one proceeds from south to north and the same phenomenon is observable in Malabar where Ponnani and Calicut in the extreme south return higher figures of increase than any other coastal taluk of Malabar or South Kanara.

41. In life as in mathematics $\frac{dy}{dx}$ is usually more important than y and its sign, magnitude and rate of change are circumstances of the first importance. In other words trend matters more than present location. Where absolute data are rare, tendency can be more reliably deduced than actual position, for successions of similar determinations have a comparison value above that of any one component. This applies to most social observation and particularly where a multitude of observers has been at work. Census reflections on housing yield an instance.

Occupied houses.

The term used in the tables is ‘ occupied houses ’, but in India where the great majority of dwellings are of mud, wattle, adobe or wood and thatched with grass or palm fronds, one hardly needs the qualification ‘ occupied ’ so important when the substantial structures in brick or stone familiar to the West

are in question, for a house unoccupied speedily ceases to qualify for the name ' house ' at all. Madras had previously defined a census house as ' the residence of one or more families having a separate entrance from the common way '. The definition adopted this time was ' every dwelling with a separate main entrance '. The old definition in Mr. Boag's words was ' sufficiently comprehensive to cover alike a Rajah's palace and the portable hut carried from place to place by a member of a wandering tribe '. It was considered that such variability was not altogether desirable. What we are concerned with is the actual residential unit and to achieve a definition of this the less mention of outside elements the better. Hence the removal of all mention of families. At first sight it might be expected that one result of the change would be to increase greatly the number of houses since buildings subdivided into independent dwellings would count as more than one house whereas formerly they might constitute only one. Actually however, in the rural tracts which account for the great bulk of the population it is rare for a family dwelling not to satisfy either definition and only in urban areas need much departure be looked for. In one small town in Madura district I came upon 20 quite independent dwellings using a common yard with a gateway on to the street. These became independent ' houses ' at the census. Similarly in Madras city there is a fair amount of subdivision of buildings in the industrial areas. On the whole, however, India and especially Madras have not (fortunately, in the interests of sanitation and public health) taken kindly to the tenement form of building and the change in definition could not have had very far-reaching effects.

42. If conditions of life remain constant, the number of occupied houses should change at the same rate as the population. It does not matter what figure is taken of persons per house, for this cancels out in calculation. Differences therefore in these rates of change indicate the presence of disturbing circumstances, chief among which is changing standard of living or social constitution. The possible effect of the change in definition referred to enters also. A rising standard of living should show itself in a tendency for houses to increase faster than population. Changing social conditions such as the weakening of the joint family system, easier and more frequent travel, departure from traditional occupations, should all, though in different and probably descending degrees, produce the same effect.

43. Subsidiary Table *vii* gives figures by natural divisions of the number of persons per house. The tale they tell is expanded by the table below which gives by districts and states the difference in percentage increase of houses and of population, the latter rate being always subtracted.

Agency—		*Deccan*—		*East Coast (Central)*—cont.	
Ganjam	− 7	Cuddapah ..	0	Coimbatore ..	− 6
Vizagapatam ..	− 4	Kurnool ..	− 1	South Arcot ..	+ 5
East Godavari ..	+ 2	Bellary ..	− 2	*East Coast (South)*—	
East Coast (North)—		Anantapur ..	+ 1	Tanjore	+ 3
Ganjam	− 7	Banganapalle ..	0	Trichinopoly ..	+ 4
Vizagapatam ..	+ 5	Sandur ..	+11	Madura	− 1
East Godavari ..	+ 2	*East Coast (Central)*—		Ramnad	+ 1
West Godavari ..	+ 4	Madras ..	− 9	Tinnevelly ..	+ 2
Kistna	+ 8	Chingleput ..	+ 5	*West Coast*—	
Guntur	+ 6	Chittoor ..	+ 5	Nilgiris	− 2
Nellore	+ 2	North Arcot ..	− 4	Malabar	− 5
		Salem	0	South Kanara ..	+ 1

44. The general conclusions which emerge from a study of these figures are that the East Coast North division and particularly the delta districts have more houses in proportion to the population than they had in 1921. The same applies to East Coast South division though to a less marked extent. In the Deccan, the position is practically unaltered ; in the West Coast the tendency appears to be for houses to be fewer. The East Coast Central division offers more marked variations in the district figures than the other divisions. It is difficult to understand why the house ratio should have diminished so much in Ganjam plains as compared with a marked increase in all its sister districts. This may reflect eccentricities in applying the house definition. Madras city figure is interesting in that its house increase should be so far behind its population rate,

the discrepancy being greater than in any other case. Yet the decade saw much building in the city. The conclusion that the provision of houses has not kept pace with the growth of population points to a notable feature of the city's life, viz., the number of street-dwellers and squatters. It is true that only 1,500 travellers and oddments were recorded as such in the city's population but this undoubtedly does not reflect the real position. Much of the cooly labour comes from the adjoining areas in Chingleput and Nellore. It lives in the open air for much of the time and in the cold weather generally seeks a friendly veranda or shed for its night's repose. In many cases these persons are found in census schedules under a house when actually they have no essential connection with it. Thus the effective number of persons per house is less than a mere division of population by occupied houses would imply. Where climate is kindly, occupation casual and rents high, one can understand why immigrant coolies should not seek to become householders and the probabilities are that street-dwellers and squatters will always form a definite element in the city's population. Even the occupied houses so-called cover a wide range of dwellings. Over 14,000 metal number-plates were issued during the city's enumeration stages. These plates were given only where a dwelling offered no space on which a number could be painted. The general nature of such a dwelling can be realized from this fact ; ordinarily it consists of a low mud wall plus a palm thatch. In the heart of the city I came across such structures packed in rows, each bearing what in the circumstances seemed an exorbitant rent. Some landowners in Madras make easy if not not very creditable profits.

45. An area where industrial development is in rapid progress will tend to show an increase in housing less than the population growth. Madras in the decade has seen much industrial development on its western and northern margins and is an illustration of this fact. Coimbatore is another. The cotton industry there has made enormous strides during the decade and labour has flocked in, a 45 per cent increase in population of the headquarters city being an indication of this. Coimbatore district had over 8,000 persons returned under floating population. In Madura the housing increase is 1 per cent less than the population growth. In this district too, industrial development took a great spurt in the decade. Applying the principle that industrial development leads to more immigrant labour one would expect the conservative agricultural areas to show little difference in the two rates and this is borne out by the very slight deviations throughout the Deccan. Only in Sandur State do the two figures differ appreciably and there the relative increase in housing can be attributed to the mining development which took place earlier in the decade and produced considerable construction. A difficult figure to explain is Malabar's. Considering the predilection of the Malayali for a separate roof, one did not look for a deficiency of 5 per cent in the housing growth. There has been in this district also, however, considerable industrial development, particularly in the neighbourhood of Calicut, and the floating population in this district reached a total of 5,000. It is notable that the Tamil districts already referred to as having a slower growth than other regions in the presidency, all return a satisfactory margin in their housing increase. Here the figures probably reflect a rise in standard of living and the same may be said to apply to the Circars Telugu districts. In general, the less progressive rural areas show little or no variation, the prosperous regions show a greater increase in housing, and those where a marked industrial development has taken place show a greater rate of growth in persons than in houses.

General conclusions.

46. To sum up the general aspects of the growth of population : public health has been good, epidemics considerably brought under control, prosperity fair for most of the decade. The growth has been marked in areas which suffered most from the calamities of 1911–21. Density and rate of growth are not connected necessarily by any inverse ratio and regions of slow growth are those in which man's struggle with nature is most keen. One portion of the presidency seems to have reached saturation. This might be defined as an ellipse of moderate eccentricity with foci in central Pudukkottai and Musiri.

Other adjoining areas are in the position that a strong and continuing emigration flow is necessary to maintain population level of subsistence. In the Deccan a kind of uneasy equilibrium has been obtained without recourse to emigration although this factor is beginning to become more prominent particularly in Cuddapah. The Telugu river deltas have passed through a period of considerable prosperity and development but this is not likely to continue at its rate in the past. The two northern coastal districts are also in the position that a strong emigration current has entered prominently into their scheme of existence and its cessation would involve some hardship in readjustment. The Agency tracts are empty and fluctuations marked as always among primitive tribes. The West Coast continues to be in some ways the most remarkable region of the presidency. Practically guaranteed as it is against famine by the bounties of nature, subsistence and life are alike far easier there than in the harsher eastern and central areas. A marked difference exists between Malabar and its northern neighbour. This may in part reflect differences in population characteristics, for the Malayali and the Tulu or Kanarese differ widely. Over much of the rural tracts of the presidency the land is supporting as many people as under the present conditions it can without an alteration in standards. The advent of great schemes of irrigation would undoubtedly produce a fresh start in population growth in the areas affected. By the time the next census comes the southern taluks of Tanjore district ought to show in their population returns the effects of the irrigation and security given by the Mettur Project. Any scheme which gave certainty to the Ceded districts would produce an accelerated growth in population.

47. Artificial modes of keeping down the population have not been consciously adopted to that end, but there is a tendency for men certainly to marry later and the beginnings of a like tendency in the other sex will probably appear ere long. The effects of this should be seen ultimately in a lower birthrate and slower increase in population. Birth control, though advocated by among others a Judge of the High Court and extensively advertised in the press and not unknown in the higher social circles, cannot be said to have as yet taken any marked place in the social system. When it will, however, is merely deferred and ten years should show a marked growth in its popularity. Books on the subject are to be found in any bookstall or publisher's list and whether they are read as mild pornography or for serious guidance it is unlikely that they can fail to exert some influence.

Contraception of a crude kind has been observed among the Goundans of Salem apparently in order to prevent the undue growth of families and consequent fragmentation of holdings and weakening of the joint family system and influence. The portent is of great interest.

Possibilities of industrial development in the presidency exist and have exerted marked influence on the presidency town, Coimbatore and Madura districts among others. Nationalist tendencies and the raising of customs barriers must go to encourage industrial growth within India. India is, and will remain, more suited to diffused industrial centres than vast agglomerations such as once characterized Bombay. From this point of view the growth of mills at smaller country centres is an encouraging feature. Coimbatore district is full of mills supplied largely by the cotton growing area they adjoin. Pollachi town for example had five or six mills in 1921 and thirty in 1931. Further industrial development in the southern cotton belt is a probability and with the advent of some form of crop protection and security the same phenomenon would probably appear in the Ceded Districts.

The South Indian, especially the Tamil, takes kindly to the use of machinery and considerable industrial development is an undoubted possibility. The great lack of the presidency in the past has been cheap power. A beginning has been made in systematic use of water power resources and it may be that in this will be found the stimulus long lacking to a marked forward step in industrial development. What might be termed the social uses of electric power are steadily advancing in popularity. The ten years have seen many towns in the

presidency develop from oil lamps or no lamps at all to electric lighting and fans. This tendency is not likely to diminish; on the contrary the signs are all the other way. In this development lies one of the great ameliorative possibilities of mufassal life. Bellary for example as a headquarters has been transformed by this advantage.

48. Possibilities of agriculture on present methods have more or less reached a maximum and the presidency can no longer feed itself. The methods championed by the Agricultural Department are not always better than those adopted by ryots from an experience of generations but there seems little doubt that if for example manuring were more regularly and scientifically practised more produce would be raised and crops rendered stronger and freer from pests.

49. Pressure of population is a relative term. An area that will support a million on one standard of life might be inadequate for half that number accustomed to better things. In studying therefore the possibilities of population increase and maintenance more than one variable enters. The standard of living in South India is though gradually none the less distinctly rising. Even ten years have seen the villager become accustomed to and take as necessities what formerly were rather unlooked for luxuries. The great advance in communications which the motor bus and car have brought has contributed enormously to widening horizons and creating needs. Better communications lead to the appearance of more genuine urban life and it is a commonplace that urban conditions develop more needs among the populace. The theory is put forward in another chapter of this report but here it will suffice to say that the tendency is and will increase for urban ideas and desires to penetrate to the village with a consequent influence on the standard of life there. A general upward tendency of the standard of living will probably lead ultimately to a positive slowing down of population increase as has happened elsewhere. A general connection between productivity and population growth is obvious enough but to establish a true correlation in South India more and better facts are necessary and a greater lapse of time. An increasing resort to emigration is usually a sign of increasing pressure upon subsistence and a preliminary or first resort before positive deceleration of natural increase appears. Emigration has become markedly more popular in most parts of the presidency during the past decade and the rising of the village standard and widening of outlook are likely to increase its popularity still more in the ensuing years. The Tamil especially has long been a rover and it is one of the problems of the South Indian position that his opportunities for roving seem likely to diminish.

i.—Density, Water-supply and Crops.

Natural division and District.	Density in 1931.	Percentage of total area: Cultivable.	Percentage of total area: Net cultivated.	Percentage of cultivable area: Net cultivated.	Percentage of cultivable area: Double cropped.	Percentage of cultivated area irrigated.	Rainfall.	Percentage of gross cultivated area under: Paddy.	Cholam, cumbu and ragi.	Other food crops and pulses.	Groundnut.	Cotton.	Other crops.
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Province ..	***328***	***61·9***	***37·4***	***60·4***	***8·1***	***28·6***	***52·16***	***28·8***	***27·0***	***22·1***	***6·8***	***6·2***	***9·1***
Agency	***89***	***37·8***	***14·4***	***38·1***	***0·8***	***6·7***	***54·60***	***39·7***	***21·1***	***17·9***	***0·1***	***0·2***	***21·0***
East Coast North ..	***386***	***68·0***	***42·7***	***62·8***	***12·5***	***40·0***	***38·83***	***39·1***	***23·8***	***20·7***	***2·4***	***2·3***	***11·7***
Ganjam	428	62·4	44·8	71·8	14·6	46·8	43·10	62·3	13·3	16·1	1·9	0·1	6·3
Vizagapatam ..	534	62·4	38·7	62·1	22·7	38·5	37·53	28·2	29·5	22·4	4·6	1·1	14·2
Godavari, East ..	660	70·2	50·3	71·7	20·5	50·4	41·40	50·3	13·1	19·0	..	0·7	16·9
Godavari, West ..	518	83·7	51·5	61·6	15·1	67·6	42·00	67·9	9·8	11·4	0·5	0·1	10·3
Kistna	354	80·2	53·0	66·1	8·6	44·3	38·50	44·7	23·6	13·8	1·7	4·0	12·2
Guntur	354	76·5	56·4	73·8	10·3	15·5	32·01	16·2	27·0	31·0	4·7	5·2	15·9
Nellore	187	58·4	24·7	42·3	4·9	42·9	37·25	28·4	42·5	20·6	0·5	2·6	5·4
Deccan	***153***	***67·7***	***44·2***	***65·3***	***2·3***	***8·9***	***23·88***	***3·7***	***35·4***	***31·3***	***11·9***	***13·7***	***4·0***
Cuddapah ..	160	54·5	28·1	51·5	4·3	23·5	27·19	9·2	42·9	19·7	18·0	6·4	3·8
Kurnool	135	59·1	42·2	71·4	2·0	5·7	22·81	2·9	34·1	32·2	14·4	13·1	3·3
Banganapalle ..	153	79·9	63·5	79·4	0·2	0·9	21·70	0·1	46·0	12·7	8·6	27·1	5·5
Bellary	170	82·5	64·6	78·2	1·6	2·9	21·79	1·3	37·4	29·6	7·0	21·8	2·9
Sandur	86	13·7	11·0	80·4	..	1·6	28·37	0·1	63·4	26·3	2·0	1·6	6·6
Anantapur ..	156	77·0	43·2	56·1	2·2	11·7	21·44	4·5	29·3	40·5	11·8	7·8	6·1
East Coast Central ..	***417***	***57·6***	***36·3***	***63·0***	***11·5***	***34·6***	***39·60***	***23·9***	***34·0***	***19·3***	***13·1***	***4·1***	***5·6***
Madras *	22,318	..	..	..	..	..	51·63	..	..	..	..	..	..
Chingleput ..	535	56·5	39·4	69·8	17·4	67·1	47·97	70·2	11·8	7·1	4·6	..	6·3
Chittoor	245	49·7	18·7	37·6	7·7	38·6	33·69	23·0	42·6	18·1	10·5	0·1	5·7
North Arcot ..	488	54·8	36·9	67·2	14·3	38·0	36·88	30·9	22·1	17·3	24·2	0·2	5·3
Salem	345	57·6	35·2	61·1	9·9	16·5	30·01	7·3	46·4	31·0	6·5	2·6	6·2
Coimbatore ..	345	60·1	41·8	69·5	10·6	27·4	29·53	4·7	49·3	20·1	6·1	14·0	5·8
South Arcot ..	583	68·8	50·3	73·0	12·5	40·4	47·51	35·4	17·9	14·8	27·1	0·1	4·7
East Coast South ..	***463***	***72·6***	***47·1***	***64·8***	***7·0***	***41·1***	***35·68***	***33·8***	***24·8***	***20·4***	***4·5***	***10·1***	***6·4***
Tanjore	638	72·0	56·0	77·8	7·7	73·0	46·33	74·7	3·6	10·0	6·0	0·1	5·6
Trichinopoly ..	443	78·4	47·4	60·5	6·2	26·7	31·91	19·0	42·7	22·3	7·2	3·4	5·4
Pudukkottai ..	340	66·6	39·3	59·0	0·2	34·2	35·03	35·2	21·0	25·5	13·7	0·4	4·2
Madura	447	68·5	40·1	58·5	8·2	40·2	33·18	22·3	29·1	27·4	4·5	11·7	5·0
Ramnad	382	77·2	52·5	68·0	3·6	30·4	33·51	27·1	26·8	20·0	2·3	18·1	5·7
Tinnevelly ..	473	69·4	44·1	63·6	11·4	35·1	34·11	24·6	22·7	21·5	0·3	20·1	10·8
West Coast	***471***	***64·0***	***30·0***	***46·8***	***10·7***	..	***120·39***	***57·7***	***0·9***	***17·0***	***0·1***	..	***24·3***
Nilgiris	172	40·4	12·5	31·0	1·6	..	77·33	7·0	3·4	29·0	..	..	60·6
Malabar	610	68·2	38·9	57·1	10·8	..	128·26	51·3	0·8	19·1	0·1	..	28·7
Anjengo	6,766	91·7	89·9	98·0	..	..	† ..	..	..	..	..	..	100·0
South Kanara ..	341	63·9	21·4	33·5	12·0	..	155·57	77·9	0·9	11·0	..	..	10·2

* Not treated as an agricultural district; taken as not available for cultivation. † No rain gauge.
Columns 3–14 are averages of faslis 1331–40, i.e., 1921 July—1931 July.

ii.—Area and Population (000 omitted), actual and percentage, by taluk density.

Natural division.	Taluks with density: Under 100. Area.	Under 100. Population.	100—150. Area.	100—150. Population.	150—200. Area.	150—200. Population.	200—300. Area.	200—300. Population.	300—450. Area	300—450. Population.	450—600. Area.	450—600. Population.	600—750. Area.	600—750. Population.	750 & over. Area.	750 & over. Population.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
PROVINCE ..	***17,847***	***1,264***	***20,514***	***2,718***	***20,939***	***3,490***	***15,846***	***3,826***	***30,981***	***11,419***	***21,290***	***11,018***	***9,865***	***6,549***	***6,588***	***6,910***
	12·4	***2·7***	***14·3***	***5·8***	***14·5***	***7·4***	***11·0***	***8·1***	***21·5***	***24·2***	***14·8***	***23·3***	***6·9***	***13·9***	***4·6***	***14·6***
Agency	13,778	892	4,033	495	2,019	356	..	..	..	..	40	21	..	..	..	..
	69·3	***50·6***	***20·3***	***28·0***	***10·2***	***20·2***	..	..	..	..	***0·2***	***1·2***	..	..	..	..
East Coast, North	..	..	3,029	384	4,569	770	4,411	991	9,045	3,328	4,961	2,664	3,691	2,403	1,827	1,636
	..	..	***9·6***	***3·2***	***14·5***	***6·3***	***14·0***	***8·1***	***28·7***	***27·3***	***15·7***	***21·9***	***11·7***	***19·7***	***5·8***	***13·5***
Deccan ..	2,606	239	11,479	1,596	8,106	1,240	4,178	972	..	..	..	..	..	..	..	..
	9·9	***5·9***	***43·5***	***39·4***	***30·8***	***30·7***	***15·8***	***24·0***	..	..	..	..	..	..	..	..
East Coast, Central.	1,076	105	411	59	4,999	918	4,969	1,286	7,410	2,682	9,106	4,744	2,747	1,784	1,302	1,772
	3·4	***0·8***	***1·3***	***0·4***	***15·6***	***6·9***	***15·5***	***9·6***	***23·1***	***20·1***	***28·4***	***35·5***	***8·6***	***13·4***	***4·1***	***13·3***
East Coast, South	387	28	..	..	..	..	1,040	285	13,523	5,030	4,173	2,035	2,427	1,671	1,730	1,726
	1·7	***0·3***	..	..	..	..	***4·5***	***2·7***	***58·1***	***46·7***	***17·9***	***18·8***	***10·4***	***15·5***	***7·4***	***16·0***
West Coast	..	..	1,562	184	1,246	206	1,248	292	1,003	379	3,010	1,554	1,000	691	1,729	1,776
	..	..	***14·5***	***3·6***	***11·5***	***4·1***	***11·6***	***5·7***	***9·3***	***7·5***	***27·9***	***30·6***	***9·2***	***13·6***	***16·0***	***34·9***

iii.—Variation and Density.

Natural division and District.	Percentage variation 1921 to 1931.	1911 to 1921.	1901 to 1911.	1891 to 1901.	1891 to 1931.	Density 1931	1921	1911	1901	1891	Proximity in yards.
1	2	3	4	5	6	7	8	9	10	11	12
Province ..	**+ 10·3**	**+ 2·2**	**+ 8·3**	**+ 7·2**	**+ 30·9**	**328**	**297**	**291**	**269**	**251**	**97**
Agency	**+ 16·5**	**− 4·0**	**+ 16·7**	**+ 2·4**	**+ 33·6**	**89**	**76**	**79**	**68**	**66**	**186**
Ganjam Agency ..	+ 7·6	− 5·0	+ 9·1	+ 4·5	+ 16·6	100	93	98	90	86	..
Vizagapatam Agency ..	+ 19·1	− 4·1	+ 20·0	− 1·0	+ 35·6	92	78	81	67	68	..
Godavari East, Agency ..	+ 18·4	− 1·8	+ 14·9	+ 17·4	+ 56·9	65	55	56	49	42	219
East Coast North ..	**+ 12·2**	**+ 3·2**	**+ 9·8**	**+ 8·8**	**+ 38·5**	**386**	**344**	**333**	**303**	**279**	**90**
Ganjam Plains ..	+ 11·9	− 1·9	+ 10·7	+ 6·3	+ 29·1	428	382	390	352	331	..
Vizagapatam Plains	+ 10·3	+ 2·0	+ 4·2	+ 7·2	+ 25·7	534	484	474	455	425	..
Godavari East, Plains	+ 14·2	+ 1·7	+ 12·4	+ 9·2	+ 42·6	660	578	568	506	463	69
Godavari, West ..	+ 16·3	+ 7·3	+ 13·9	+ 12·5	+ 59·8	518	445	415	365	324	..
Kistna	+ 15·9	+ 6·4	+ 15·2	+ 16·1	+ 64·9	354	305	287	249	214	..
Guntur	+ 12·5	+ 6·6	+ 13·9	+ 13·3	+ 54·7	354	314	295	259	229	..
Nellore	+ 7·3	+ 4·3	+ 4·2	+ 2·8	+ 19·8	187	174	167	160	156	..
Deccan	**+ 10·3**	**− 3·8**	**+ 3·8**	**+ 5·3**	**+ 15·9**	**153**	**139**	**145**	**139**	**132**	**141**
Cuddapah ..	+ 6·9	− 0·7	+ 1·6	— 0·3	+ 7·5	160	150	151	149	149	..
Kurnool	+ 12·0	− 2·2	+ 7·2	+ 6·6	+ 25·2	135	121	123	115	108	..
Banganapalle ..	+ 6·9	− 6·7	+ 21·9	− 9·1	+ 10·5	153	143	154	126	139	..
Bellary	+ 12·5	− 11·0	+ 2·3	+ 7·5	+ 10·1	170	151	170	166	154	..
Sandur ..	+ 16·4	− 13·8	+ 20·1	− 1·7	+ 19·3	86	74	86	71	72	..
Anantapur ..	+ 9·9	− 0·8	+ 3·2	+ 8·2	+ 21·8	156	142	143	139	128	..
East Coast Central ..	**+ 11·3**	**+ 3·0**	**+ 7·9**	**+ 8·9**	**+ 34·7**	**417**	**374**	**364**	**337**	**309**	**87**
Madras	+ 22·8	+ 1·6	+ 1·8	+ 12·6	+ 43·0	22,318	18,169	17,885	17,564	15,604	..
Chingleput ..	+ 10·9	+ 6·2	+ 7·3	+ 9·1	+ 37·8	535	483	454	424	389	..
Chittoor	+ 9·4	+ 2·0	+ 5·6	+ 5·3	+ 24·2	245	224	219	208	197	..
North Arcot ..	+ 13·2	+ 5·2	+ 12·2	+ 6·2	+ 42·0	488	431	410	365	344	..
Salem	+ 14·0	+ 3·4	+ 4·0	+ 13·0	+ 38·4	345	303	293	282	249	..
Coimbatore ..	+ 11·3	+ 4·9	+ 6·9	+ 10·3	+ 37·6	345	310	296	276	251	..
South Arcot ..	+ 5·8	— 1·8	+ 12·2	+ 7·6	+ 25·4	583	551	561	500	465	..
East Coast South ..	**+ 4·7**	**+ 3·0**	**+ 8·4**	**+ 5·4**	**+ 23·2**	**463**	**442**	**429**	**396**	**375**	**83**
Tanjore	+ 2·4	− 1·5	+ 5·2	+ 0·8	+ 6·9	638	623	633	601	597	70
Trichinopoly ..	+ 0·5	+ 4·0	+ 7·8	+ 5·1	+ 18·5	443	441	424	394	374	..
Pudukkottai ..	− 6·1	+ 3·6	+ 8·3	+ 2·0	+ 7·4	340	362	349	323	316	..
Madura	+ 9·4	+ 4·3	+ 12·9	+ 11·3	+ 43·4	447	409	392	347	312	..
Ramnad	+ 7·0	+ 3·3	+ 9·1	+ 4·5	+ 26·0	382	357	345	316	303	..
Tinnevelly ..	+ 7·3	+ 6·2	+ 8·0	+ 8·9	+ 34·0	473	441	415	384	353	..
West Coast	**+ 13·5**	**+ 3·3**	**+ 7·1**	**+ 6·3**	**+ 33·5**	**471**	**415**	**401**	**375**	**353**	**82**
Nilgiris	+ 33·8	+ 6·7	+ 5·1	+ 11·6	+ 67·4	172	129	121	115	103	..
Malabar	+ 14·0	+ 2·8	+ 7·8	+ 5·6	+ 33·4	610	535	520	483	457	..
Anjengo	+ 14·3	+ 6·3	+ 15·7	+ 9·7	+ 54·0	6,766	5,918	5,572	4,817	4,393	..
South Kanara ..	+ 10·0	+ 4·4	+ 5·3	+ 7·4	+ 29·9	341	310	297	282	263	..
								Amindivi Islands ..			**42**
								Malkanagiri ..			**306**

iv.—Variation in Natural Population (000 omitted).

Province.	1931. Recorded population.	Immi-grants.	Emi-grants.	Natural population (2+4 — 3).	1921. Recorded popula-tion.	Immi-grants.	Emi-grants.	Natural popula-tion (6+8 — 7).	Percentage variation (1921—1931).
1	2	3	4	5	6	7	8	9	10
Madras	47,194	267	2,165	49.092	42,794	210	1.731	44,315	+ 10·8

Separate figures for British Territory and Madras States are not available.

v.—Population Variation according to .. { *Census.* / *Vital statistics.*

District.	1921-31. Births.	Deaths.	Per 1,000 of 1921 population Births.	Deaths.	Columns 2–3 (000 omitted).	1931 *minus* 1921 (census) (000 omitted).
1	2	3	4	5	6	7
Total ..	***14,210,900***	***9,811,998***	***34·7***	***23·9***	***4,399***	***4,423***
Agency *	71,742	51,287	33·8	24·2	20	249
Ganjam	646,828	439,127	35·2	23·9	208	218
Vizagapatam	808,562	577,884	36·3	25·9	231	229
Godavari, East	537,756	354,054	36·6	24·1	184	209
Godavari, West	267,611	179,312	25·6	17·1	88	172
Kistna †	575,541	399,148	53·0	36·7	176	172
Guntur	691,555	474,721	38·2	26·2	217	226
Nellore	426,000	288,048	30·8	20·8	138	101
Cuddapah	297,040	220,230	33·5	24·8	77	61
Kurnool	357,821	270,407	39·1	29·6	87	110
Bellary .. .. .. } Sandur .. .. .. }	352,608	246,813	40·4	28·2	106	109
Anantapur	354,705	240,437	37·1	25·2	114	94
Madras	225,035	224,441	43·7	43·6	1	120
Chingleput	552,802	361,062	37·1	24·2	192	162
Chittoor	435,977	290,963	34·4	22·9	145	124
North Arcot	759,071	438,285	36·9	21·3	321	265
Salem	721,585	451,348	34·2	21·4	270	298
Coimbatore	716,492	461,975	32·3	20·8	255	249
South Arcot	690,605	515,161	29·8	22·2	175	134
Tanjore	687,515	601,275	29·6	25·9	86	56
Trichinopoly	521,262	411,057	27·4	21·6	110	10
Madura	653,928	449,931	32·6	22·4	204	189
Ramnad	457,879	332,675	26·6	19·3	125	121
Tinnevelly .. .. .. } Anjengo .. .. .. }	690,172	472,073	36·2	24·8	218	140
Nilgiris	43,130	39,479	35·4	32·4	4	43
Malabar	1,184,180	717,665	38·3	23·2	467	435
South Kanara	483,498	303,140	38·8	24·3	180	125

* There are no returns for Vizagapatam Agency. Figures for Ganjam Agency for 1927–30 are included in Ganjam district ; separate figures for the Agency are not available.

† This includes figures of West Godavari for the years 1921–24.

Vital statistics for Pudukkottai and Banganapalle States are not available.

vi.—Variation by Taluks classified by density at beginning of each decade.

(a) Actual.

Natural division.	Decade.	Taluks with density Under 100.	100–150	150–200	200–300.	300–450.	450–600.	600–750.	750 and over.
Province	1921–1931	+ ***245,421***	+ ***321,801***	+ ***320,046***	+ ***421,540***	+ ***1,030,153***	+ ***1,074,356***	+ ***349,623***	+ ***636,507***
	1911–1921	— 21,306	— 111,734	— 13,470	+ 75,380	+ 463,776	+ 396,508	+ 75,298	+ 59,543
	1901–1911	+ 165,259	+ 193,147	+ 128,922	+ 272,412	+ 973,114	+ 883,692	+ 224,314	+ 375,742
	1891–1901	+ 96,247	+ 21,581	+ 251,180	+ 285,612	+ 648,628	+ 778,946	+ 179,657	+ 327,299
Agency	1921–1931	+ ***183,356***	+ ***51,595***	+ ***11,625***	..	..	+ ***2,783***	..	..
	1911–1921	— 28,256	— 29,473	— 5,605	..	..	+ 221	..	..
	1901–1911	+ 143,901	+ 65,782	+ 11,410	..	..	+ 4,876	..	..
	1891–1901	+ 71,528	— 46,379	+ 5,743	..	..	+ 952	..	..
East Coast, North ..	1921–1931	..	+ ***29,523***	+ ***99,637***	+ ***143,455***	+ ***374,531***	+ ***413,881***	+ ***120,688***	+ ***145,123***
	1911–1921	..	+ 22,176	+ 22,317	+ 12,807	+ 105,212	+ 69,193	+ 45,419	+ 61,877
	1901–1911	..	+ 28,374	+ 77,711	+ 120,073	+ 314,424	+ 233,920	+ 56,533	+ 110,537
	1891–1901	..	— 17,448	+ 71,612	+ 63,331	+ 210,466	+ 235,212	+ 78,181	+ 132,863
Deccan	1921–1931	+ ***23,064***	+ ***224,552***	+ ***64,764***	+ ***65,501***	..	..	..	..
	1911–1921	+ 7,475	— 106,998	— 39,533	— 6,207	..	..	..	..
	1901–1911	+ 16,568	+ 92,574	— 961	+ 29,960	..	..	..	..
	1891–1901	+ 13,059	+ 83,659	+ 42,391	+ 46,429	..	..	..	..
East Coast, Central ..	1921–1931	+ ***9,901***	+ ***9,133***	+ ***132,133***	+ ***170,894***	+ ***326,541***	+ ***457,356***	+ ***32,763***	+ ***214,572***
	1911–1921	— 3,083	+ 339	— 1,318	+ 39,989	+ 129,377	+ 187,815	+ 3,886	— 7,400
	1901–1911	— 878	— 983	+ 30,631	+ 92,871	+ 180,175	+ 432,969	+ 52,445	+ 64,891
	1891–1901	+ 8,034	+ 3,362	+ 113,841	+ 136,263	+ 135,562	+ 346,687	+ 14,242	+ 127,553
East Coast, South ..	1921–1931	+ ***4,574***	..	..	+ ***10,723***	+ ***187,770***	+ ***98,680***	+ ***66,019***	+ ***120,705***
	1911–1921	+ 794	..	..	+ 17,151	+ 190,646	+ 117,684	— 8,056	— 18,614
	1901–1911	+ 2,284	..	..	+ 17,516	+ 404,041	+ 170,380	+ 46,472	+ 131,760
	1891–1901	+ 1,297	..	..	+ 24,708	+ 245,232	+ 163,755	+ 20,449	+ 18,200
West Coast ..	1921–1931	+ ***24,526***	+ ***6,998***	+ ***11,887***	+ ***30,967***	+ ***141,311***	+ ***101,656***	+ ***130,153***	+ ***156,107***
	1911–1921	+ 1,764	+ 2,222	+ 10,669	+ 11,640	+ 38,541	+ 21,595	+ 34,049	+ 23,680
	1901–1911	+ 3,384	+ 7,400	— 10,131	+ 12,012	+ 74,474	+ 41,547	+ 68,864	+ 68,554
	1891–1901	+ 2,329	— 1,613	+ 17,593	+ 14,881	+ 57,368	+ 32,340	+ 66,785	+ 48,683

vi.—Variation by Taluks classified by density at beginning of each decade—cont.

(*b*) Percentage.

Natural division.	Decade.	Taluks with density Under 100.	100–150.	150–200.	200–300.	300–450.	450–600.	600–750.	750 and over.
Province	1921–1931	+ ***17·9***	+ ***10 4***	+ ***10 4***	+ ***10 8***	+ ***8 6***	+ ***10·1***	+ ***9·6***	+ ***12·7***
	1911–1921	— 1·5	— 3·5	— 0 4	+ 2·0	+ 4·0	+ 3·9	+ 2·1	+ 1·2
	1901–1911	+ 13·5	+ 6·4	+ 4 4	+ 7·6	+ 9 2	+ 9·4	+ 6·7	+ 8·2
	1891–1901	+ 8·5	+ 0·7	+ 9 3	+ 8·7	+ 6·5	+ 9·0	+ 5·7	+ 7·7
Agency	1921–1931	+ ***20·8***	+ ***10·9***	+ ***8·1***	..	..	+ ***15·4***	..	..
	1911–1921	— 3 1	— 5·9	— 3 8	..	..	+ 1·2	..	..
	1901–1911	+ 18·8	+ 15·1	+ 8·3	..	..	+ 37 6	..	..
	1891–1901	+ 10·3	— 9·6	+ 4·4	..	..	+ 7·9	..	..
East Coast, North ..	1921–1931	..	+ ***6·3***	+ ***9·7***	+ ***12·0***	+ ***14·1***	+ ***12·2***	+ ***12 4***	+ ***12 9***
	1911–1921	..	+ 5·0	+ 2·2	+ 1·1	+ 4·1	+ 2·1	+ 4·9	+ 5·8
	1901–1911	..	+ 6 8	+ 8 4	+ 11 3	+ 14·0	+ 7·5	+ 6·5	+ 11·6
	1891–1901	..	— 4·0	+ 8·4	+ 6·3	+ 10 4	+ 8·2	+ 9·9	+ 16·2
Deccan	1921–1931	+ ***7·6***	+ ***11·2***	+ ***8·3***	+ ***11·5***	..	..	..	..
	1911–1921	+ 2·5	— 5·0	— 4 8	— 1·1	..	..	..	..
	1901–1911	+ 5 9	+ 4·6	— 0·1	+ 5·5	..	..	..	..
	1891–1901	+ 4 9	+ 4·3	+ 5·4	+ 9·3	..	..	..	..
East Coast, Central ..	1921–1931	+ ***10·4***	+ ***18·1***	+ ***14·4***	+ ***12 5***	+ ***10·7***	+ ***9·8***	+ ***7·2***	+ ***15·1***
	1911–1921	— 3 1	+ 0·7	— 0·1	+ 3·1	+ 4·4	+ 4 2	+ 0·9	— 0 5
	1901–1911	— 0·9	— 1·9	+ 3·5	+ 7·5	+ 6·6	+ 10·7	+ 13 2	+ 4·8
	1891–1901	+ 8·8	+ 7·0	+ 14·7	+ 12·4	+ 5·2	+ 9·4	+ 3·7	+ 10·4
East Coast, South ..	1921–1931	+ ***20·1***	..	..	+ ***2·4***	+ ***3·6***	+ ***5·4***	+ ***5·9***	+ ***7·5***
	1911–1921	+ 3·6	..	..	+ 4·1	+ 3·7	+ 6·9	— 0·7	— 1·1
	1901–1911	+ 11·6	..	..	+ 4·3	+ 8·6	+ 11·2	+ 4·3	+ 8·8
	1891–1901	+ 7·1	..	..	+ 6 5	+ 5 5	+ 12·0	+ 1·9	+ 1·2
West Coast	1921–1931	+ ***36·1***	+ ***8·3***	+ ***6·1***	+ ***9·2***	+ ***13·4***	+ ***12·9***	+ ***12 0***	+ ***18 0***
	1911–1921	+ 2·7	+ 2·7	+ 5·8	+ 3·6	+ 3·8	+ 2·8	+ 3·2	+ 2·8
	1901–1911	+ 5·4	+ 9·8	+ 5·9	+ 3·8	+ 7 9	+ 5·7	+ 7·0	+ 8·9
	1891–1901	+ 3·9	— 2·1	+ 11·3	+ 5·0	+ 6·5	+ 4·7	+ 7·3	+ 6·7

vii.—Persons per 1,000 houses and houses per 1,000 square miles.

Natural division.	Persons per 1,000 houses. 1931	1921	1911	1901	1891	Houses per 1,000 square miles. 1931	1921	1911	1901	1891
Province ..	***5,052***	***5,085***	***5,289***	***5,260***	***5,310***	***64,932***	***58,506***	***55,005***	***50,315***	***47,577***
Agency	4,621	4,412	4,580	4.461	4,511	19,210	17,058	17,410	15,514	14,969
East Coast, North ..	4,766	4,896	5,097	5,160	5,148	81,013	70,400	65,137	58,706	54,346
Deccan	4,852	4,828	5,043	5,089	4,907	31,635	28,846	28,738	27,679	27,355
East Coast, Central.	5,445	5,444	5,790	5,872	5,751	76,567	68,841	62,540	59,060	55,369
East Coast, South ..	4,873	4,969	5,098	5,185	5,166	94,980	88,864	84,086	76,701	72,671
West Coast	5,595	5,445	5,580	5,653	5,746	84,138	76,335	71,841	66,253	63,466

CHAPTER II.

THE POPULATION OF CITIES, TOWNS AND VILLAGES.

Reference to statistics.

IMPERIAL Table I shows for each district population its urban and rural elements. Table III breaks these elements into various classes by magnitude. Tables IV and V illustrate urban distribution from different standpoints. The latter relates for each district the towns within it in order of size and gives details of religious composition. Table IV takes the town class as unit and thus shows a single descending order of magnitude for the entire province, district details appearing as a secondary feature. This table gives a history of the population of each town from 1881. The subsidiary tables at the end of this chapter show the urban-rural and religious distribution in each natural division and the growth over the last 60 years of the six classes of towns and of the 22 towns treated as cities.

Panchayat Boards.

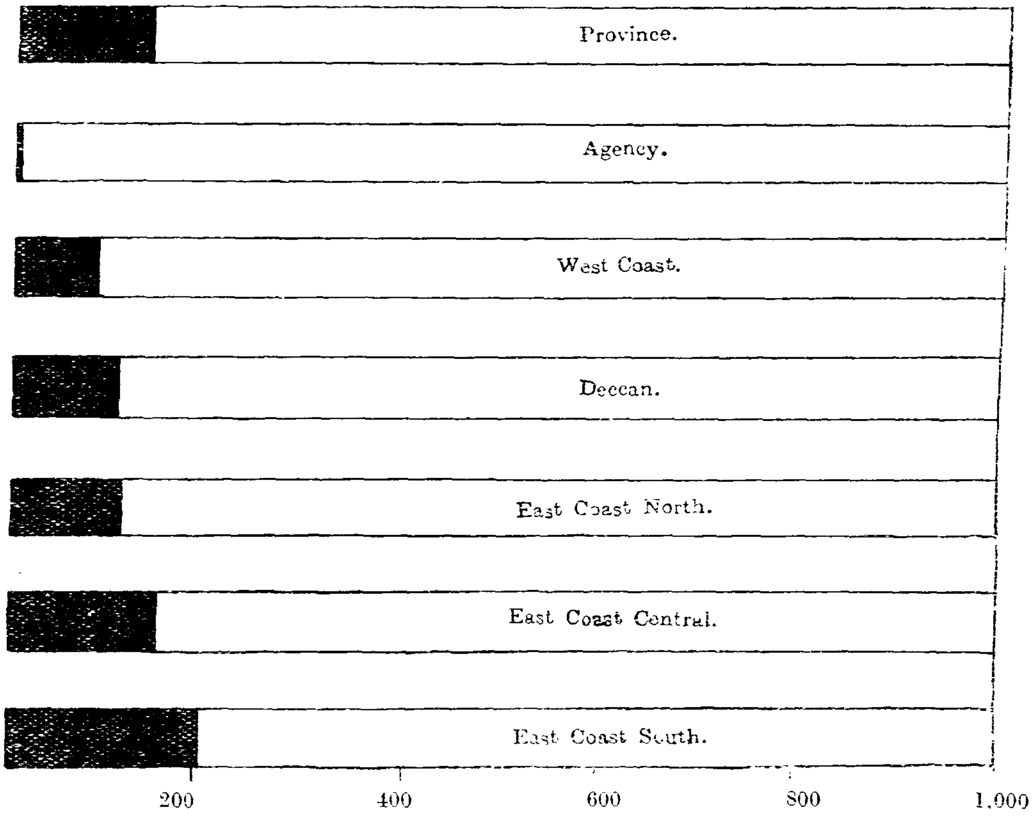
2. Imperial Table IV contains one change in terminology in the disappearance of the familiar term ' Union '. This reflects changes in the administration system affecting local government in the presidency. The Madras Village Panchayats Act of 1920 permitted the constitution of a panchayat for every village, actual erection however being ordered only on the expressed wish of a village. The bodies so constituted were given wide powers to attend to the needs of their villages and to undertake any works conducing to the improvement of village life. Their chief functions were lighting, sanitation, vaccination, registration of births and deaths, schools, markets and village forests. None of these were obligatory. No specific resources were placed at their disposal and the taxation levied took a variety of forms, being paid in kind, in labour or in money at the convenience of the villager or the village. Some more active bodies undertook control of common sources of income, e.g., thatching grass growing in tank beds, cattle droppings in public places, the right to gather babul pods, remove silt from drinking-water ponds, etc. The State gave grants for elementary schools, libraries, communications and water-supply. All resident males not below 25 years of age could vote and be elected. This greatly extended the opportunities of Adi-Dravidas to enter the panchayats in appreciable numbers.

In the course of the decade several difficulties were found in co-ordinating the activities of these panchayats with those of taluk and district boards. To adjust these the Panchayat Act was repealed and the Local Boards Act amended to bring the panchayats within its scope. It is as a result of this amended Act that the old term ' Union ' disappears to be replaced by ' panchayat board '. Panchayats can now spend money on the improvement of agriculture and stock, and the encouragement of cottage industries. One-sixth of the land-cess collected by the Revenue Department along with land revenue is now allocated to panchayats and will be credited to them direct twice yearly. They retain the other sources of income already indicated.

Election procedure is now, unfortunately perhaps, more elaborate with wards and electoral rolls. Qualifications are more rigorous and property now appears as a limitation. Reservation of seats can be made for Adi-Dravidas. An officer of the local Government entitled the Inspector of Local Boards functions to supervise the working of these bodies and to assist with advice or control.

This legislation represents an attempt to get back to the village sufficiency which was so marked a feature of Indian life formerly and the disappearance of which in any country cannot be for its good. Like everything else in India, the personal factor enters strongly into the efficiency of the new bodies and the condition of panchayat villages depends largely upon whether there is in the village and on the panchayat some person of light and leading. The attempt to restore village ' autonomy ' to use a popular word, has come just in time. Whether it will progress it is too early to say, but the omens are not unfavourable.

Urban ■ and Rural □ elements in 1,000 population by natural divisions in order of urban proportion.



3. The diagram above which is a pictorial representation of Subsidiary Table *i* illustrates what has been already mentioned, that the Madrasi is predominantly a village-dweller. Only about an eighth of the population is found living in urban areas. Before further deduction or comment is made some indication should be given of the qualifications which attach to the matter in these tables. There is in the first place no hard and fast line separating town from country. The definition of a town at this census was that of 1921, viz., besides municipalities and cantonments and civil lines, ' every other continuous collection of houses inhabited by not less than 5,000 persons which a provincial superintendent may decide to treat as a town for census purposes '. The criteria applied in reaching this decision were the character of the population, the relative density of the residential dwellings, the importance of the place as a centre of trade and its historic associations. Officers were warned against treating as towns mere overgrown villages without urban characteristics. Clearly no absolute criterion was in question and much depended here as in so many other census matters on the application by district officers of general considerations. Every care was taken to secure consistent application but it is improbable that local vagaries have been avoided. In any country it would be difficult to condense into a formula the attributes of a town and in South India certainly no hard and fast line exists. The position is further complicated by the fact that the term ' village ' used in these statistics does not connote in any sense a normal residential unit. In a ryotwari area such as the greater part of Madras Presidency the village must for practical purposes coincide with the unit of revenue administration. That may on occasion coincide with a formed habitation unit but need not necessarily do so and in fact rarely does. The ryotwari administrative village is essentially a charge entrusted to certain officers. From this it follows that a village may not even be consistent in itself and villages have in the past frequently varied according to retrenchment or expansion in the staff of village officers. In Malabar a further variant appears, for here the term ' village ' represents a totally different phenomenon ; in essence an extent of country throughout which isolated houses are dotted. **Definitions.**

Villages and hamlets.

4. Little purpose would therefore be served for Madras by an attempt from our tables to discover the average distance between villages by the formula $d^2 \frac{200}{n \sqrt{3}}$, for the result of this calculation can have a meaning only where the number of census villages corresponds closely to the number of residential villages. As an example of the wide divergence between the village unit and the unit of rural life there are in the Harur taluk of Salem district only 143 villages ; if, however, hamlets are added, the number becomes 652. Before the formula could be applied even to this figure it would be necessary to examine which of those hamlets should be taken as residential units and which should be clubbed with others or with a parent village to achieve a true residential unit. The typical Madras ' village ' consists of a Kasba in which are situated the few shops ; round this at varying distances are small hamlets, and the frequency for example in maps of Telugu taluks of the entry, ' Adi-Andhrapalli ' shows the origin of many such hamlets, the segregation of the depressed classes.

' Village ' in these statistics implies therefore an undetermined number of small residential units. For strict comparison of urban and rural conditions, the hamlet should be the rural unit or at any rate the ' village ' should be broken up. This division is not possible. Various additional criteria were suggested to me to help in deciding whether a particular place should be classed as a town. One was that the presence of a coffee-club was a reliable indication of ' urbanity '. The size of the bazaar and the variety of merchants represented were others. Even undisputed towns in the presidency, and Madras City is no exception, retain at least on their margins much that strikes the observer as rural in character. This applies particularly to Salem which despite its total population of over a lakh is still a long way removed from the more or less uniform aggregation which one expects of a city. Madura and Trichinopoly do convey something of the city feel and the same applies to Calicut, Cocanada, and Mangalore, all seaports.

Towns.

5. Villages may exceed 5,000 in population but lack urban characteristics. One or two such were removed from the list of towns, e.g., in Anantapur. A historical and rather melancholy interest attaches to one disappearance. Nizampatam in Guntur can no longer be reckoned a town for our purposes. This under the name of Peddapalle was the first place at which the English traded on the Coromandel Coast. Captain Hippon landed here in 1611. Nizampatam now probably never sees a European face. More towns were added, however, than were removed, and most of the additions came from the south Tamil area, which so far has contributed most to the population treated as urban. This region seems to be more moved by dawning civic consciousness and took more interest in the classification. Pudukkottai State has now 9 towns instead of the headquarters municipality which has hitherto been its sole contribution. Three of these fail to reach the 5,000 minimum population. Tirumayam however (4,118) possesses distinct urban characteristics. Kiranur and Alangudi (headquarters of a taluk) were included at the special request of the State authorities who wished indeed the net to be thrown even wider. It can be said of the south Tamil country, especially the Chettinad region which is shared by Ramnad and Pudukkottai, that even its smallar aggregations have more of a town air than many a larger place elsewhere. Thus the presence in some cases of electric lighting, the result of Chetti beneficence, conveys a distinct suggestion of what my friend would have called ' urbanity '. Consequently, though neither Kiranur nor Alangudi reaches 2,500 and are not altogether satisfactory inclusions, they are not without urban characteristics. The remaining Pudukkottai town to fall below the 5,000 mark comes in quite a different category, indicated by the note in the flyleaf to Imperial Table V. The object of tables III–V should be to reflect the actual conditions of habitation ; before such a purpose, accidents of administrative boundary should recede. No uninformed visitor to Kirasevalpatti-Pillamangalam could possibly tell where one ended and the other began. This boundary like so many more in India is a freak of history rather than the reflection of a natural severance but there is no reason why freaks should be allowed to obscure facts. Hence the recognition of the polysyllabic combination as a single effective urban unit ; it undoubtedly satisfies all the conditions.

6. Similar reflections attend on the whole question of urban and rural division. Census limitation followed that of administration, i.e., the bounds of a municipality were the bounds of the urban population for census purposes, and the same procedure applied to panchayat boards and other urban areas. Where no administrative body existed, the urban aggregation was defined from local circumstances and thereafter maintained distinct throughout from the rural area around. A consequence is that population detail for towns given in these tables reflects in fact a minimum. In some cases the divergence from the true urban unit is greater than in others. This is notably so in Madras City, where the Corporation limits are encircled continuously from north to south by residential regions indistinguishable from the city itself. Population figures were taken out for this 'Greater Madras' and yielded an aggregate of 739,320. Any general considerations should regard this rather than the 647,230 of the city proper as the effective aggregation.

Vagaries in conferment of town status must have acted both ways, by wrong exclusion as well as wrong inclusion, but the probabilities are that the figures in the tables are a close representation of effective urban-rural distribution and if anything tend to understate the urban element. With increasing population, developing industry and extending communications, a comparative growth in urban proportion is almost inevitable, while the principle of inertia transferred to administrative matters makes it reasonably sure that no change will be made in an existing classification unless a need for it is apparent if not overdue. The fact that technical municipal boundaries have to be followed means that a considerable element of population which is in fact urban is not so treated and this element is in itself enough to counterbalance any inclusions of matter more rural than urban.

7. These prolegomena over, it may be said that urban population shows a considerable increase. Health during the decade has been comparatively good, epidemics rare, trade brisk and industry growing for most of the time, and communications developing greatly.

Urban population compared with other provinces.

The province's urban proportion is now 136 per 1,000. This is higher than that of the Central Provinces while Bihar and Orissa yields a proportion of only 40 for the total province and 44 for British territory. The Madras rate exceeds also the 112 for the United Provinces but falls well behind Bombay and Baroda rates of 212 and 214 or Mysore's 159. Cochin State returns a higher figure but Travancore's is lower. The West Coast division figure, which is more strictly comparable than the whole presidency's with that for Travancore and Cochin, is 89. Cochin's 171 reflects a much greater congestion in this small State. Clearly although Madras is essentially a province of village-dwellers, it is much less so than its northern neighbours, Bihar and Orissa and the Central Provinces. England and Wales' 1921 figure of 793 shows how far any part of India has to go, however, before rates comparable with those for Western Europe are achieved.

Comparisons of urban elements depend upon a uniform system of classification. The 5,000 minimum for a town has been much more strictly observed in Madras than in other areas and clearly this difference in procedure might produce considerable effect on urban proportions. Mysore's urban element exceeds that of Madras as does Baroda's but the position is altered when one reflects that while 66 out of the 107 towns in Mysore have less than 5,000 inhabitants and 14 out of 50 in Baroda, only 13 of Madras' 350 towns were below this figure. If all Mysore towns below 4,000 are omitted its urban ratio becomes exactly the same as Madras' while if an allotment is made on the Madras proportion of Class VI towns the Mysore ratio falls below that of Madras by over a third. A similar adjustment in the Baroda figure would reduce it to below 200 but still well above Madras. Bengal and Bihar and Orissa are close to the Madras strictness in interpretation. The Central Provinces is even stricter but Bombay with almost a third and the United Provinces with almost half of their total towns represented by units of less than 5,000 seem to have followed a less strict system. The presence of cantonments in northern India helps to swell the list of the so-called towns and probably contributes largely to the United Provinces' tally of small towns.

There are places of over 7,000 inhabitants in this presidency which have not been included in the list of towns on the grounds that they did not sufficiently satisfy the conditions regarding the possession of urban characteristics and more than one omission made at this census was of a place of over 5,000 inhabitants. Differences in administration find reflection here. While only 3 municipalities in Madras have less than 10,000 inhabitants every Mysore 'town' appears as a municipality even though its population be 841. By the Census Commissioner's instructions every municipality was to be treated as a town; hence one obvious reason for the difference in classification procedure. It would be well in 1941 to apply a rigid population limit or at any rate some criterion which will ensure more uniform procedure and more comparable results.

Diagram (Logarithmic).

Rate of growth of urban population by classes, 1881-1931.

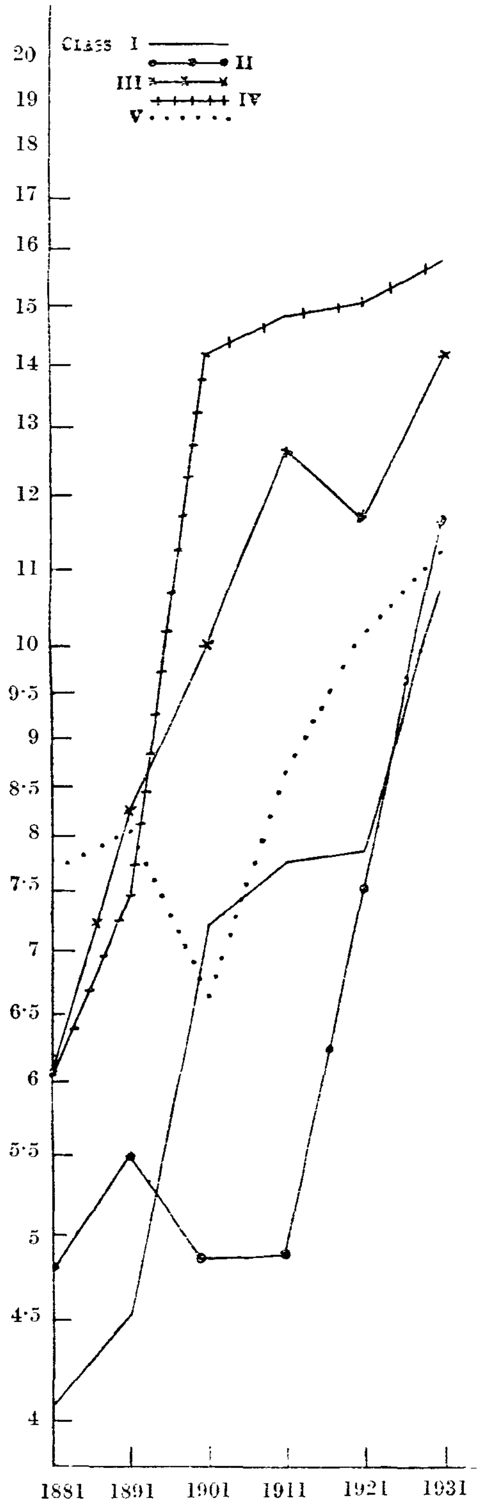
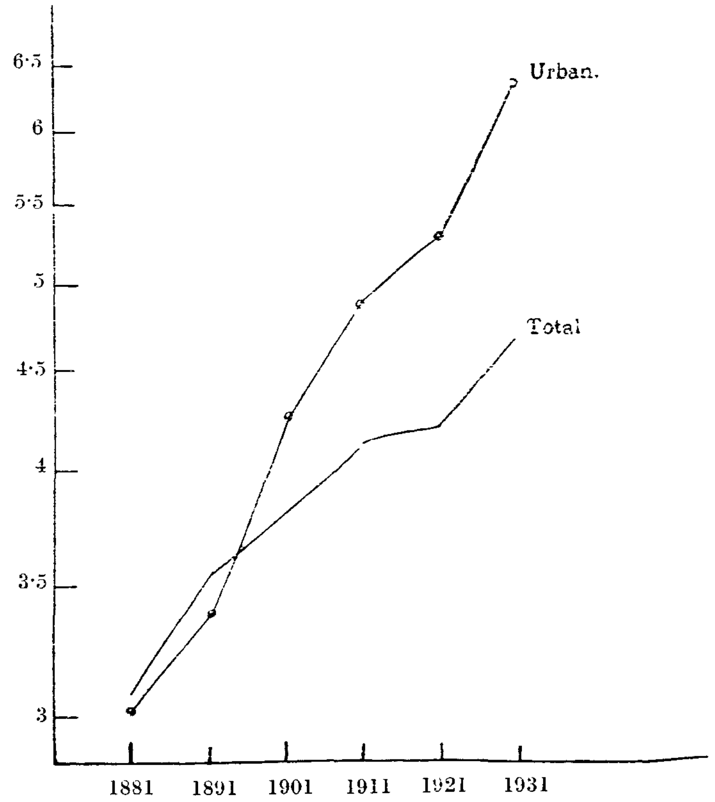


Diagram (Logarithmic).

Rate of growth of total and of urban population, 1881-1931.



Growth of urban population.

8. The logarithmic diagram shows the urban population as increasing at a greater rate than the total and a fortiori than the rural element. In the first decade the urban population increased rather more slowly than the total population. From 1891, however, the difference in rates is marked, divergence being widest in 1891–1901 and 1921–1931. To some extent, deductions from such a curve are subject to the qualification indicated above in the discussion of the lack of a marked frontier between town and country. Nevertheless the curves may be taken to indicate (i) that the urban element has for the last 40 years been increasing more rapidly than the rural and (ii) that the signs of the past decade are that the differential rate is on the increase, i.e. $\frac{dy}{dx}$ is increasing more rapidly for the urban than for the rural population. The difference in rates of growth will be greater 10 years hence than now. The second logarithmic diagram shows the rate of growth of the urban population by the various classes set out in Imperial Table IV. Such curves are subject

to oscillation as a result of transfers of towns from one class to another at differing censuses. Thus, the advent of Salem to Class I at this census represented an increase of over a lakh. These oscillations do not however affect the illustrative value of the curves but indeed enhance it. That some town or towns qualified by increase for another class is after all a fact of demographic importance in itself and worthy of illustration. Class I cannot lose a component by promotion ; it is rare for cities of this size ever absolutely to decrease. Consequently one would expect the curve for this class to show a steady upward trend and that is what it offers. The two marked thrusts upwards represent the accessions of Madura and Trichinopoly in 1901 and of Salem in 1931. The curve for Class II shows a drop at 1901 corresponding to the large increase in Class I at the same time. It shows no drop however in 1931 as a result of the removal of Salem but continues its 1921 rate of growth. Class III increases more steadily than either of the above two up to 1911, falls back in 1921 as a result of scissions from its ranks and increases boldly again during the last decade. Class IV increases steeply to 1901 and only gradually thereafter. Class V pursues a more oscillating course than any of the others but returns a greater rate of growth during the past decade than Class IV. The curves seem to show that the Class IV town is becoming less favoured as an urban unit, while its Class II companion shows a marked growth.

It is sometimes argued that a correct appreciation of the growth of the urban element for a decade can be obtained only from a consideration of regions treated similarly at both opening and closing census. This view loses sight of the fact that what is of importance is after all the actual section of the population considered as urban at any one census. To restrict the comparison only to regions similarly classed at both censuses is to omit from consideration important possible elements of change. Golden Rock Colony is an indubitable town in 1931. Equally undoubtedly, however, this place did not exist at all in 1921. Its emergence is one of the facts to be considered and to omit it from consideration because it was not a town in 1921 seems an unnecessary and misleading particularity. The figures below give decade increases in urban population (*a*) for actual census figures and (*b*) for figures adjusted as indicated above :—

	Percentage increase in towns as classed at previous censuses.				
	1921–31.	1911–21.	1901–11.	1891–01.	1881–91.
(*a*)	21·0	7·8	14·5	25·5	13·1
(*b*)	16·3	1·8	14·5	24·8	13·7

No comparison of towns by classes on these lines is given, for the qualifications attaching to the value of figures (*b*) for the total urban population are very much greater when a rather arbitrary division of towns into classes is in question. Figures (*a*) and (*b*) do not differ so greatly as might have been expected and the fact that they deal with total population contributes to moderate the oddities that would arise if classes of towns were taken. The increase for 1921–31 is less for (*b*) than for (*a*). This reflects the new towns included for the first time at the last census.

Urban element by language area.

9. Previous Superintendents have remarked that the Tamil is more of a towndweller than the other presidency races. Figures of linguistic population have been taken out for the chief mother tongues. For these urban ratios were extracted, shown in the margin. The greater Tamil preference for town life is clear. The much smaller total numbers concerned in the Kanarese and Tulu ratios make these subject to some qualification but their magnitude illustrates differences between Malabar and its northern neighbour and bears out an impression one gains in journeying through the presidency, that the Kanarese is more of a townee than the Telugu. The lowness of the Oriya figure brings into pronounced relief the differences between this tract and its southern neighbour. The figure 398 is almost identical with that discovered for Bihar and Orissa province.

Linguistic area.	Urban per 10,000.
Tamil	1,568
Kanarese	1,365
Tulu	1,164
Telugu	1,061
Malayalam	726
Oriya	398

Urban element by natural divisions.

10. Subsidiary Table *i* shows the importance of the urban element to vary with the natural division and to be greatest in the south. Omitting the Agency, where conditions are hardly comparable with those of other divisions, the regional range is from about one-fifth in the south to less than a tenth in the west. The variation is not extreme but averaging tends to mask variation and natural division figures are in essence a system of averages ; here as elsewhere, district figures reveal more of tendency than the division and show up some of the less 'natural' aspects of the association it represents. Urban element per 1,000 is shown below by natural divisions for districts in ascending order.

Agency—		*Deccan—*		*East Coast South—*	
6. Ganjam ..	Nil.	108. Kurnool ..	57	195. Trichinopoly ..	141
East Godavari	Nil.	Cuddapah ..	91	Tanjore ..	166
Vizagapatam	9	Anantapur ..	112	Pudukkottai ..	173
		Banganapalle	147	Madura ..	201
		Bellary ..	172	Ramnad ..	214
East Coast North—		Sandur ..	311	Tinnevelly ..	256
113. Ganjam ..	60	*East Coast Central—*			
Nellore ..	83	153. Chittoor ..	57	*West Coast—*	
Vizagapatam	109	Salem ..	80	89. Malabar ..	77
West Godavari	132	South Arcot ..	97	South Kanara	91
Guntur ..	137	Coimbatore ..	113	Nilgiris ..	320
Kistna ..	142	North Arcot ..	149		
East Godavari	144	Chingleput ..	162		

The Agency figures call for little comment. They reveal where the urban element declares itself and will develop most ; Vizagapatam Agency will house one or two more 'towns' in 1941. The district figures for the East Coast North division show the urban element stronger in the centre and weak at the extremities. It is highest in the district of greatest density, East Godavari, and in general such a relation might be expected. Nellore's low figure is another illustration of how widely it differs from its companion districts in the division and having regard to its much lower density is not surprising. Vizagapatam and Ganjam figures, however, have no such relationship to density, for Vizagapatam is second in density in the whole division and Ganjam exceeds Kistna and Guntur. This district adjoins Bihar and Orissa, and in that province as already mentioned, urban aggregation is far less than in Madras. An examination of the taluk figures for Ganjam shows, with the exception of the taluk containing the chief town of the district, a steady increase in urban proportion from north to south, i.e., the Oriya end of the district has a weaker urban element than the Telugu. In Kodala, Chatrapur and Surada taluks, the urban element is nil. In Aska it is 23, in Ghumsur 37, whereas Tekkali, Parlakimedi and Chicacole succeed each other southwards with 57, 68 and 90. Chicacole is the only taluk with more than one town in it. The Oriya is less of a town dweller than the Telugu. To some extent an increase in the urban element is a concomitant of advancing civilization, and from this point of view the Oriya tracts might be expected to favour town residence less than their more advanced southern neighbours. Vizagapatam forms the northern outpost of Andhradesa and is less advanced than the Godavaris and Kistna which form the heart of that region. It is usual for outposts to develop more slowly than the centre and Vizagapatam's lower urban figure is a reflection of this differential development. The Deccan figures reveal wide differences between Kurnool with 57 persons per 1,000 and Sandur with 311. The small total population of Sandur inevitably discounts to some extent any deductions made and the inclusion of a single place has had the effect of changing the urban proportion from zero to nearly a third. Three hundred and eleven, however, gives a truer idea of conditions in this State than does zero and it is a fact of some interest that nearly a third of the State inhabitants are numbered within the State capital. When so small an area forms a separate administration, a heavier urban proportion is to be expected. The same to a less extent applies to Banganapalle where the former omission of the State capital from the list of towns conveyed a wrong impression of the conditions. Bellary's 172 is as surprising as Kurnool's 57 and it may not be without significance that Bellary is the most strongly Kanarese area of the Deccan. Kurnool's 57 is however almost certainly too low. Local officers proposed no change from 1921 in the list of towns but a perusal of the results of the census produces the impression that some additions ought to have been made. The town representation of this district in Table V is not so representative as that for its fellow districts in the

Deccan and a truer figure would be over 100. The East Coast Central average of 153 is artificially raised by the presence of Madras city. Chittoor falls notably below its associates and approximates here as in other ways more to Deccan than Tamil conditions. The western part of this division is markedly below the eastern in urban contribution, the North Arcot and Chingleput proportions being much higher than those of Salem or Coimbatore. This reflects in part their much greater density, although South Arcot with the highest density in the division produces one of the lower urban proportions. It reflects more probably an essential difference in nature, for Salem and Coimbatore differ in many ways from the more easterly Tamil districts with which they are associated in the so-called natural division. The two regions are separated by spurs of the Ghats which lie along the Salem-Arcot boundary, and Salem and Coimbatore district with part of Trichinopoly and North Madura would really form a more 'natural' division by themselves. The East Coast South district figures show an interesting and regular increase in urban proportion as we go south. Ramnad and Tinnevelly do give the traveller an impression of greater urban frequency than elsewhere in the presidency. The West Coast division figure of 89 breaks up into striking differences between Malabar's 77 and the Nilgiris' 320. This last figure is the highest returned from any presidency unit and is approached only by Sandur. The much higher urban proportion is an indication of much that is precocious if not artificial in the development of this small hill district. The Malabar, and to a less extent, the Kanara figures reflect the peculiar conditions of the West Coast already referred to.

Urban proportion by religion.

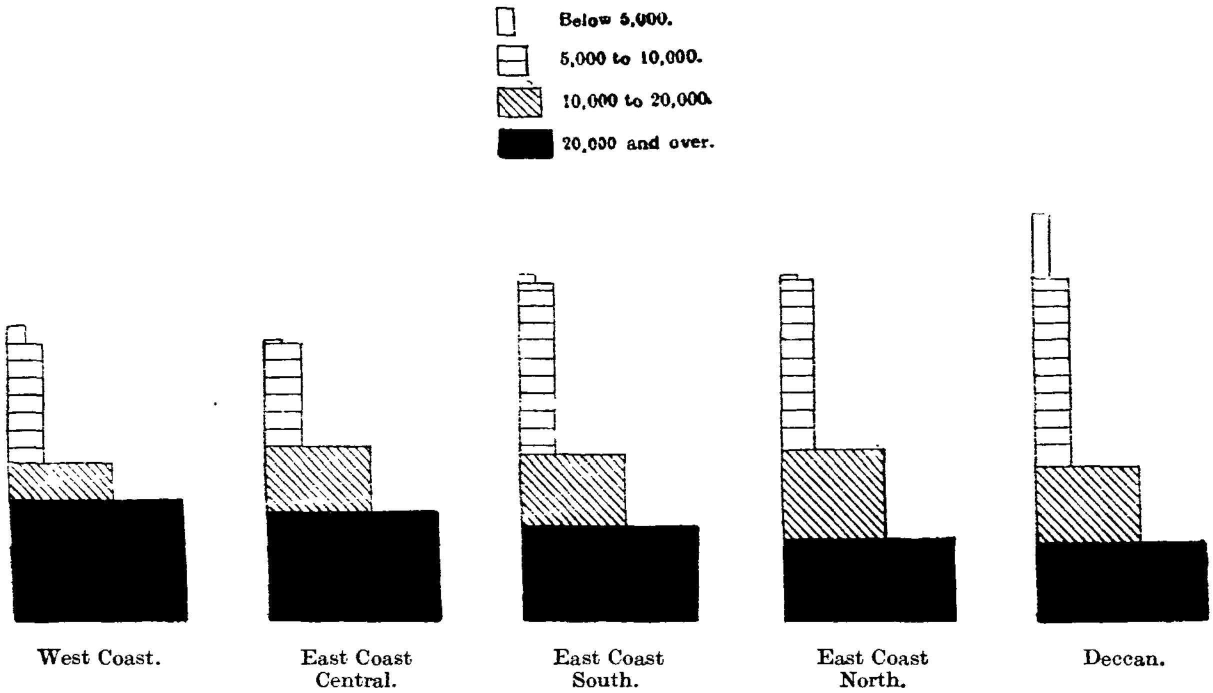
11. Subsidiary Table *ii* indicates what earlier census reports have noted, that the smaller religions favour the town more than does the pervading Hinduism and the less numerous their adherents the greater their urban predilection. This illustrates a tendency not peculiar to India. Small communities generally tend to cluster and immigrants always seek towns, for the same reason, that it is more difficult for strangers or persons of unusual customs to settle or be happy in the less tolerant and more suspicious rural areas. Though a large part of Madras Muslim stock is indigenous, the greater predilection of the Muslim may reflect his partly immigrant history. Where he is most numerous and most indigenous, the Muslim is least a town dweller; his West Coast figure differs very little from that for Hindus. In the same region the Jain is less of a town dweller than either Hindu, Muslim or Christian, for in Kanara he is much more a normal unit of the population than the peripatetic north country trader he generally is elsewhere. Another indication of the tendency for the stranger and the immigrant to seek the town is that the Hindu urban element is strongest in the one division where he is an immigrant and a stranger, the Agency.

Popularity of residential units.

12. Subsidiary Table *i* and the diagram illustrate the popularity of the various sizes of residential unit. The apparently considerable dimensions of the West Coast average village, 1,784, and the large proportion of villages of 5,000 and over, represent for reasons already given no effective concentration. The Deccan 1,024 is much more a real representation and in this division more than in any other does the revenue village bear some relationship to the residential unit. Its troubled history is responsible, for the Deccan villager had to be able to concentrate quickly for defence; dispersion in indefensible hamlets does not conduce to longevity or prosperity when freebooters are abroad. Hence the sizable Deccan village clustered round its fort. The Agency average village population, 137, brings up the one-street, frequently far from permanent habitation unit of that empty region. Its town average is meaningless, for there is but one specimen.

The marked preference of the West Coast for a town of some size finds expression in Subsidiary Table *i*, which shows nearly three-fourths of the urban population there to be concentrated in towns of 20,000 and over. The West Coast or Malabar village may be far from the general idea conveyed by the term, but the West Coast town is a genuine urban aggregation. Both the Tamil divisions favour the larger town unit, but the central districts much more so than the south. A glance at Imperial Table V will bear out Tinnevelly and

Contribution in each natural division (except Agency) of each class of town to 1,000 urban population.
1 square inch = 1,000.



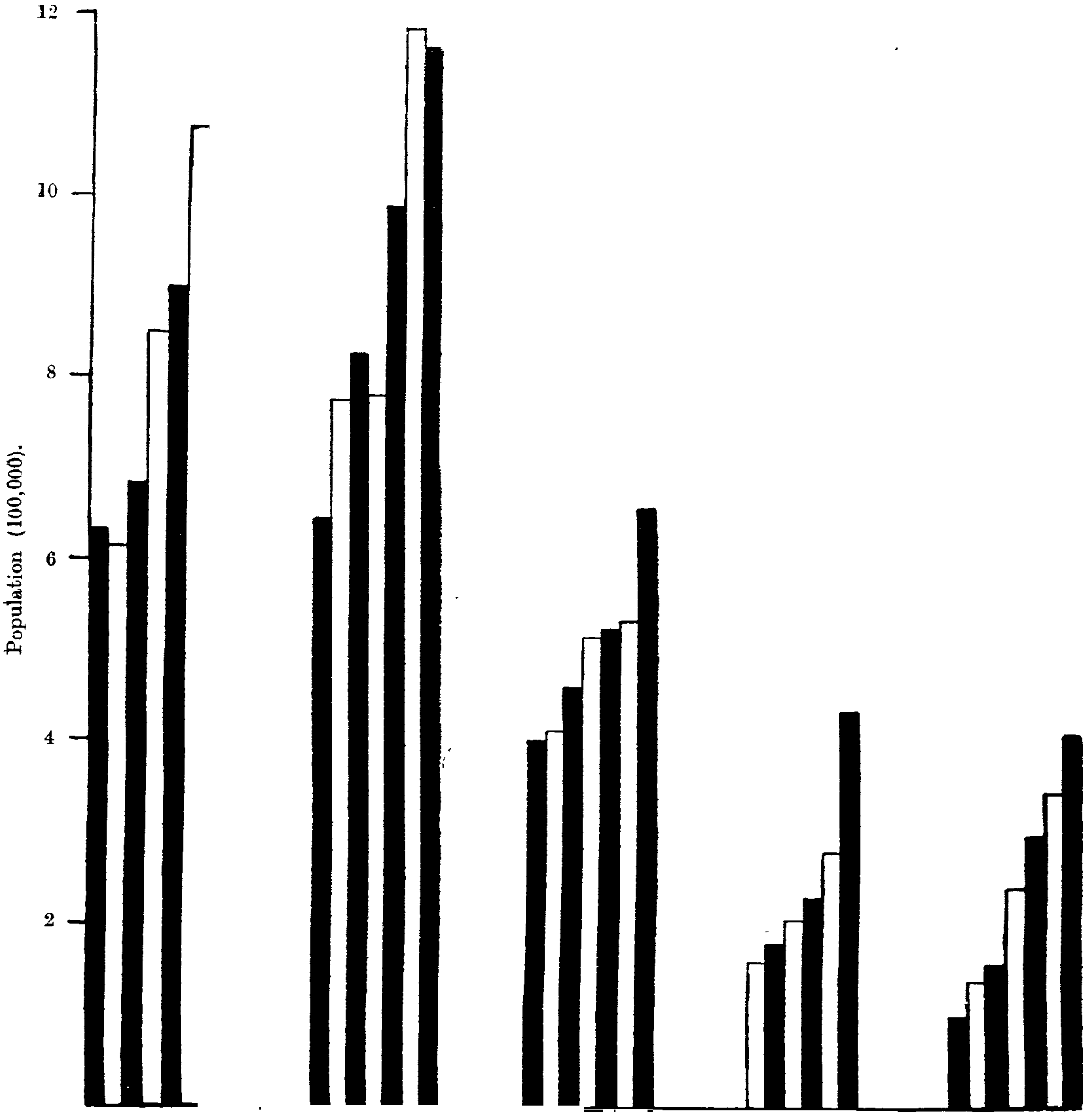
Ramnad's greater predilection for the small town. In the two Telugu divisions, less than half the urban residents are found in towns of 20,000, the Deccan showing an evener distribution. The favourite population unit is the village of 500–2,000 in which nearly half the rural and over 2/5 of the total population find a home. Over three-quarters of the rural and 2/3 of the total population dwell in villages between 500 and 5,000. Succeeding censuses will probably show an increased proportion of villages from 2,000–5,000 at the expense of the next lower class but it is unlikely that in any appreciable passage of time the predilection of the Madrasi for the unit 500–5,000 will be seriously affected.

Cities. 13. The term ' city ' is defined as any town with a population of 100,000 or over but as in 1921 the Madras Government desired the lower limit to be brought to 50,000, i.e., Classes I and II of Imperial Table IV, and Imperial Tables VI, VII, X, XIII and XIX give separate detail accordingly for towns of and above that population. There are only two cantonments in the presidency, Wellington and St. Thomas Mount; other areas where troops are stationed are Trichinopoly, Madras, Calicut and Cannanore. In Madras the troops are concentrated in Fort St. George and are conveniently therefore detached from the civil unit. They do not however form a cantonment. In Trichinopoly, Cannanore and Calicut, the military areas form part of the ordinary municipal limits. Tinnevelly and Palamcottah are independent municipalities, though only the river Tambaraparni divides them and they are effectively one urban unit. Proposals have been made for union but neither wishes to lose its identity and it is unlikely so far as can be seen at present that the two will ever coalesce. The object of the tables however should be to illustrate the degree of urban aggregation rather than the mere distribution of municipal government. For this reason I have given on the flyleaf the total population of the two municipalities taken together and in any consideration of this district, this union should be kept in mind and applied where urban matters are in question. The association of these two municipalities adds in effect one to the number of Class I towns in Madras and I suggest that in 1941 even if the two municipalities retain their separate existence and rivalry, they should for the purposes of Imperial Tables IV and V be treated as one urban unit.

14. The diagram illustrates and compares the growth over 60 years of five great cities of India. Madras, marked advance over 1921–31 as compared with the practical stagnation of the previous twenty years is clearly shown. The other cities too, except Bombay, show a pronounced upward thrust for the past decade.

Population of Chief Cities of India.

(1871-1931).



* 1871 population not available.

Population of Cities.

The city increases show marked variations among themselves and could be grouped into the following classes. The first consists of Salem which has almost doubled itself in the decade. In the second class where the increase is 25 per cent or over come Coimbatore, Madura, Guntur, Bezwada, Tuticorin, Vizagapatam, Ellore and Masulipatam. In two cases only is the increase less than that of the district in which the city lies ; these are Conjeeveram and Tinnevelly, while in a third, Kumbakonam, the increase is almost the same.

Salem's enormous increase is largely factitious. Its population in 1901 was 70,621. Allowing for normal increase, the 1931 figure would in any case have approached 90,000. The 1911 and 1921 totals of 59,153 and 52,224 were both vitiated by a heavy plague exodus at the time of the census-taking. No plague prevailed in February 1931 and as has been said elsewhere the virulence of this disease has much abated in recent years. Other reasons attributed for the increase are a succession of poor monsoons tending to drive labourers into the town in search of work. The clusters of huts that sprang up in and round the town in recent years are an indication of this. Till recently moreover the cloth trade was in a very flourishing condition and attracted an unusual number of weavers to the town.

In the second group the most marked increase is that of Coimbatore with nearly 45 per cent. Here again, the figures of past censuses tended to obscure the real facts, for in 1911 there was a partial evacuation on account of plague. Apart from this, however, everything is in favour of Coimbatore's increase. It was in olden days (and still is) a place of strategic importance and the strategic point tends to be the focus for a future city. It commands the all-important Palghat gap which in its turn commands access to the west coast and it covers also the Gazalhatti Pass to the north. Its climate is as pleasant as any plains climate in South India. It has been free from epidemics since 1911. A circumstance of peculiar importance is its position on the edge of a large cotton growing area. The uprising of cotton mills on its margins is a feature that impresses even the most casual passer-by and reflects the extension given to mofussil weaving and spinning centres by the boycott of foreign goods and the drift from Bombay. Present indications are that its increase will continue to be a marked feature of the presidency's urban life. The 31 per cent increase in Madura during the decade has also a close relationship with industrial development though its 1921 population suffered to some extent from an exodus caused by fear of plague. The city houses one of the largest spinning mills in the world and during the decade others have sprung up. The advent of mill labour in thousands leads to increase in the number of traders of all kinds. Railway construction connecting Madura with other centres has contributed much to the increase. Madura is peculiar in its attraction for foreigners since death in this holy city is believed to prevent reincarnation. In its case too, the increase is likely to be marked and continuous. Guntur and Bezwada, but little removed in distance, are equally close in their rate of increase. Industrial development has played a considerable part in the growth of Guntur where the tobacco trade and industry grow steadily in importance. Cotton and livestock are also handled in this centre. Bezwada's increase is mainly from its strategic position at the head of the Kistna delta and as the most important railway junction in South India. Its railway station has one of the longest platforms in India and this reflects the degree of traffic on the many lines which meet there. In a road and railway centre of importance, floating population must always tend to be greater and this feature plays a particular part in Bezwada railway station which is reached by the chief trains on all lines in the middle hours of the night and so contributes a good deal to railway enumeration at every census. The headquarters of the Andhra University were for some time located in this town but have since been removed to Vizagapatam. This may affect its growth in future but only slightly ; Bezwada's position is such that it is bound to grow. Tuticorin's increase of 35 per cent does not represent genuine growth to the same extent as Bezwada or the others, for during the decade adjacent areas containing about 2,500 occupied houses were brought within the municipal limits. If these are allowed for, its increase becomes comparable with that of Tinnevelly district within which it lies. Vizagapatam has seen considerable development during the decade as a result of the harbour construction and the advent of new educational institutions. The presence of a first-class hospital brings patients from all over the Circars and the general repute of Waltair as a sanatorium continues to attract large numbers of visitors. Vizagapatam is now the headquarters of the Andhra University and may derive some additional importance from that fact. Its growth hereafter depends largely on the development of the harbour. If this last develops into a first-class port handling large traffic, the population of Vizagapatam is bound to swell greatly. It is too early yet to forecast. Through railway communication from Raipur to Vizianagram has begun in 1932 but whether it will contribute largely to movement through Vizagapatam port is yet to be seen. Ellore's increase is largely a function of its situation as headquarters of the new district of West Godavari. It is the headquarters of a jute industry of some importance. It is unlikely however that it will show 25 per cent increase during the coming decade. Masulipatam's increase of nearly 30 per cent comes as rather a surprise, for the outward aspect of this town does not suggest vigorous life or rapid growth. Much of it indeed suggests rather decay and its purlieus are in the last degree depressing. It has long had a reputation for dreariness.

A Resident in 1723 appealed for a transfer on account of his growing melancholy while an outspoken successor a century later swore that 'no one but a Dutchman, a frog or an alligator would have chosen it for a habitation'.

The presidency town's increase is 22·8 per cent over the decade. This is in marked contrast with 1·6 over 1911–21 and 1·8 over 1901–11 and is a sufficient comment on the merits of the belief not uncommon some years ago, that further considerable increase need not be looked for. Industrial development has been marked in Madras as in other cities during the decade and the belching chimneys on its western approach are one testimony to this. New industries have sprung up behind the tariff wall, pencils, matches and tobacco (beedis being largely made and exported). A considerable extension on the south-west has added a populous and growing garden city and the improvement of communications within the town itself has probably helped considerably to greater settlement in the formerly rather inaccessible northern areas.

Conjeeveram and Tinnevelly, whose increase rate is below that of their respective districts, are both largely residential towns. This is indicated by the fact that 914 and 962 respectively of their residents were born in the district within which the city lies. The increase in such towns must be closer to that in the surrounding country than in the case of industrial or communication centres whose position or activities are in rapid development. The remaining cities all return increase above that of the districts in which they lie. Mangalore and Cocanada both approach 25 per cent, and for the same reasons, developing trade and the attraction of the city for unemployed. Calicut's increase of 20 per cent can be attributed largely to genuine development of an important commercial centre. The fact that it had been singularly free from epidemics during 1930–31 contributed to the rise in population. This town, which possesses many of the attributes of a real city, is likely to continue to grow. Kumbakonam, essentially a university and professional town, reflects almost exactly its district rate of increase. Palamcottah does likewise for Tinnevelly but Cuddalore with 16·9 per cent has grown much faster than South Arcot district with 5·4. Its railway communications have been improved within the decade.

The heavy increase in practically all cities is too general a feature to be explainable altogether by particular incidents. It seems that a stage has now been reached at which urban development will be notably accelerated in Madras presidency and 1941's proportion will be much above 1931's 136.

15. The figures for Class III towns in Imperial Table IV show considerable variations in rate of growth. Thus Tenali and Kurnool are now within 300 of each other in population but whereas Kurnool in 50 years has increased by 15,000, Tenali's growth is 30,000 and the town is now eight times its 1881 size. The towns reflect the regions in which they lie. Half Kurnool's increase in the 50 years was achieved during the past decade and reflects probably to some extent the effect of the establishment of through connection between Hyderabad and the Madras and Southern Mahratta Railway metre gauge system. Negapatam as a large city has Ichabod written over it, for with the departure of the South Indian Railway workshops and the thousands of workers they represented, much of its glory is indeed departed. It and Bellary are the only towns in this class which once qualified for treatment as cities. Bellary showed a considerable increase over the last decade and may very possibly qualify again ten years hence. Vizianagram, which is a railway junction of considerable importance now that through connection to Raipur is established, ought to develop considerably in the next decade and will probably be found then in Class II. Palghat's apparently slow increase is explained by the fact that the municipality (which constitutes our town) shed much of its outlying area population during the decade. When this is allowed for, Palghat's increase over the decade comes to 12 per cent. This is below that for Malabar district, but above that for the Palghat taluk (8). This taluk is a half way house between Coimbatore on the east and the true west country regions and the approximation of both taluk and town increase to the eastern rates is noteworthy. Sembium, Saidapet and Tiruvottiyur, which are in fact suburbs of Madras, share the large increase of the presidency town.

Variation in population of towns.

The construction camp at Mettur but for its purely temporary nature would enter this class of town, for it returned a population of 27,654. Certainly in such urban amenities as lighting, water-supply and sanitation, Mettur is far in advance of practically every other town in Madras.

Class IV towns offer fewer instances of sensational accretion. One of them, however, Golden Rock, has a peculiar interest. This is the colony laid out by the South Indian Railway Company around the workshops to which they transferred all previous workshops whether for broad or metre gauge lines. The government of this town is in the hands of the railway and with its shaded, well laid out roads, neat houses and attractive appearance, it might serve as an example to South Indian municipalities. Its 13,000 odd population represents no mere growth but as it were an act of creation, the effects of which have been felt so far afield as Negapatam and Podanur. Another is Tiruppur whose 66 per cent increase reflects cotton prosperity. It is the heart of the Coimbatore cotton belt and is also a road centre of importance. In the same district the 32 per cent increase of Kurichi spells the effect of developing communications, for Kurichi is in effect Podanur, where the gauges of the South Indian Railway meet. It is only a few miles from Coimbatore and within not very many years will probably be indistinguishable from it. The temple town of Tiruchendur, which disputes with Comorin and Rameswaram the honour of having been Rama's starting point for Ceylon, offers the most peculiar oscillations in population over the 50 years covered by the table. It seems impossible for the census date to miss some festival or other at this town where the temple by the sea has a perennial attraction for the pilgrim or the casual visitor. The only variation is in the relative popularity of the resort at the time. 1901 and 1911 both showed over 25,000, 1921 gave it 8,000 and 1931 sees it rise again to 15,000. Even 15,000 is probably more than its true population. 1921's 8,000, however, was equally certainly too few. Krishnagiri's apparent large increase reflects to some extent a plague exodus in 1921.

The majority of the new towns are as might be expected to be found in Classes V and VI. Bhimavaram is a notable example of the effect of developing communications. This small town in the heart of the West Godavari delta is now a junction of gauges and a commercial centre of growing importance. If street and house congestion are indications of urban characteristics there can be no doubt about Bhimavaram's right to the title of town. Alandur in Chingleput was formerly part of St. Thomas' Mount but has shared in the rapid growth of the presidency town and its suburbs and now claims almost 10,000 inhabitants to itself. Lalgudi shows a heavy decrease and so to a less extent does Kadiri, both towns having descended in class at this census as compared with 1921. Kadiri's reflects the economic depression, for the groundnut decorticating industry which used to provide much cold weather employment in this town has fallen on evil days and at the 1931 census had practically closed down. Lalgudi's fall represents the effect of the shedding of some of its 1921 extent. The decrease in St. Thomas' Mount represents the separation of Alandur and some connected areas. The decrease in Kandanur represents the formation from the former Kandanur of 3 towns at the present census.

The small hill station of Kodaikanal took a hot weather census in May 1931, the total being 9,857 against the census return of 6,523 and the male-female sex composition 5,492 : 4,365. A 50 per cent increase over the normal indicates the effect of hot weather resort. This increase ratio has risen at every census, indicating the town's growing popularity.

Origin and growth of towns.

16. Towns take their rise in many ways. The earliest form is the strategic point. When rule is in uncertain, such places are of first importance and round them grow the earliest permanent non-rural aggregations. Trade routes and markets inevitably sought their protection and consequently communications grew towards such places which *ex hypothesi* were nodal points. It is in urban aggregations that labour is most easily available and good communications are favourable to industry. Hence when industrial development came along, it too tended to seek these places. Marked local conveniences for a particular industry or occupation produce townships and under more settled government, communications no longer seek necessarily or always the strategic

point; as a country develops in civilization, the pattern of its communications should tend more towards a grid than a series of radiating webs. Even so, bridgeheads or crossing points on great rivers, important gaps or passes must always hold a primary position in the communication system of a country and one would expect to find such places appearing among its more important urban collections. Conditions in Madras bear this out. Rajahmundry commands the Godavari crossing, Bezwada the Kistna, and Trichinopoly the Kaveri. Other river crossing points are Nellore on the Pennar, Chingleput on the Palar, Villupuram on the Pennaiyar, Tinnevelly on the Tambraparni and Bhavani at the Kaveri-Bhavani junction. On the West Coast the towns might be said to have arisen at the more important crossings of the lagoons and back-waters. Rajahmundry in addition to commanding the coast crossing above the delta commands the river access to the interior, so with Bezwada. Coimbatore commands the Palghat gap and Tenkasi the Shencottah pass, the only two breaks in the Western Ghats in the presidency. Through such gaps communications are bound to seek a way and any point commanding them has a perennial importance. Urban growth depends much upon industrial development but probably in an agricultural area like Madras more upon easier and swifter communications. It is because in a land of few or difficult communications people move less that their meeting points, i.e., towns, are smaller and fewer. Improve the communications and urban development is a certain consequence. Some indication has already been given of the exceptional growth during the decade of some towns which have undergone marked development as railway centres. The Dindigul-Pollachi line has turned each of these towns into a railway junction of importance and produced the consequential development attending upon such a change. Virudhunagar and Tenkasi tell the same story. Bhimavaram in Kistna is now a meeting of gauges and Erode which has become the focal point of the South Indian Railway broad gauge system has taken an added importance from that fact. Salem and Cuddalore are now joined by direct rail route; the increase in both towns has been marked and above that in their surrounding districts. Vriddhachalam has now become a centre of communications where this line and the Villupuram-Trichinopoly chord cross. As a result of the Trichinopoly-Manamadurai chord, Pudukkottai town, now on this railway, increased 10 per cent when the State was decreasing by 6. An interesting incidental consequence has been a decline in the importance of its market: Trichinopoly is easily accessible now. Vizianagram and probably Dhone should increase markedly in 1931–41.

17. The advent of the bus has contributed to the comparatively greater growth of all natural communication centres. Most places of railway importance are also of road importance and strategic points must always hold a primacy in all forms of communication. Coimbatore, Trichinopoly, Tenkasi, Dindigul, Guntur, Bezwada and so on, will always command any form of land communications. It is a commonplace in any town where routes meet to see buses parked by the dozen where ten years ago they were a rare and not altogether pleasant phenomenon. The little town of Bhavani which is a dozen miles from the railway has come into its own since the motor engine brought back the importance of the road and during the decade it increased by 25 per cent. Ranipet which commands the river crossings to Bangalore and Vellore is a road centre of much importance and had a 39 per cent increase. In general, any town is to some extent a meeting place of roads and as the bus becomes more and more popular it will find a wider range; a necessary consequence of this will be that every meeting of routes will derive importance and accelerated growth from that fact. To the arrival of the bus, the advent of cheap and swift communication making travel easier for the villager, must be attributed a great share in the definitely greater growth of the urban element during the past decade. **Effect of communications.**

18. In the small table below appear certain towns for which the percentage decade increase is greatly in excess of the district rate. Salem, Krishnagiri and Melur, which recorded increases of 70 per cent or over, have been omitted

as the 1921 populations were affected by plague exodus. Towns practically suburbs of Madras or which have had pronounced industrial expansion have also been excluded.

District and town.	Increase, 1921–31.	District increase.	District and town.	Increase, 1921–31.	District increase.
Ganjam—		12	Coimbatore—		11
Narasannapeta ..	70		Pollachi	86	
Vizagapatam—		10	Tiruppur	66	
Narasapatam ..	21		Erode	47	
Srungavarapukota..	21		South Arcot—		6
East Godavari—		14	Vriddhachalam ..	38	
Ramachandrapur ..	26		Tirukoyilur ..	32	
Cocanada	24		Tindivanam ..	24	
West Godavari—		16	Tanjore		2
Bhimavaram ..	39		Kuttalam	31	
Ellore	25		Tanjore	12	
Kistna—		16	Trichinopoly—		0·5
Bezwada	37		Trichinopoly ..	19	
Masulipatam ..	30		Madura		7
Guntur—		13	Dindigul	41	
Tenali	49		Periyakulam ..	40	
Narasaraopet ..	36		Bodinayakanur ..	33	
Guntur	35		Ramnad—		7
Sattenapalle ..	28		Karaikudi	41	
Bapatla	27		Devakottai ..	26	
Nellore—		7	Virudhunagar ..	25	
Nellore	28		Tinnevelly—		7
Gudur	25		Koilpatti	25	
Kurnool—		12	Tenkasi	24	
Kurnool	27		Malabar—		14
Nandyal	25		Cannanore	24	
Bellary—		13	Calicut	21	
Rayadrug ..	26		South Kanara—		10
Anantapur—		10	Puttur	42	
Guntakal	25		Udipi	25	
Anantapur	24		Mangalore	24	
Chittoor—		10	Karkal	20	
Chittoor	23		Pudukkottai—		— 6
Chingleput—		11	Pudukkottai ..	10	
Chingleput	22				
North Arcot—		13			
Ranipet	39				
Tiruvannamalai ..	27				
Arcot	24				

A comparison of this list with a route map will illustrate the above argument. In almost every case where a town's increase has been greatly above that of the district, it will be found that it possesses certain natural advantages as regards approach by rail or road and the largest increases are those which during the decade have seen some marked development supervene in their communications. The chief examples have been already cited: Tenali is a junction of rail gauges in a prosperous region. The railway reached Sattenapalle during the decade. Guntakal is a natural meeting place of routes and Periyakulam's 40 per cent increase though to some extent accounted for by plague exodus affecting the 1921 figure, is a notable illustration of the theory, for it now commands one of the few through communications connecting the presidency with the West Coast over the Ghats. It is not without interest that further on along this same road appears Gudalur which has reached 'township' during the decade and has scored an increase of 21 per cent. Bodinayakanur's growth is attributable to similar causes. The railway has now reached it and by means of a ropeway it is connected with the Devikolam area in Travancore; from a remote village at the end of a valley it has become a railhead and centre of communications. The railway has reached Karaikudi during the decade whereas ten years ago its nearest railway station was Arantangi, 15 miles away as the crow flies and twice that distance by road. Devakottai in the same region has been brought within half a dozen miles of the railway from an even greater previous remoteness. Sivaganga, become a railway station by the same agency, returns for 1921–31 a 16 per cent increase, a rate almost equal to that over the 40 years before; its highest previous increase in any decade had been 6 per cent and for 1911–21 was below 1 per cent. The terminus of this chord line, Manamadurai, has increased by 19

per cent. The railway arrived there only at the end of the decade. It is likely that Manamadurai will show a marked increase during 1931–41 and it is not without significance that Paramagudi has decreased by 17 per cent. Manamadurai having become a junction is bound to remove some of the importance from its fellow town farther east. In the West Coast, communications are more a matter of the coast and with the exception of Puttur in South Kanara, the towns returning the greatest relative increase are at crossings on the coast. Puttur commands the main direct road access from the east. In general, towns on the West Coast, particularly Malabar, do not outstrip the district growth so much as in other cases. This reflects again the greater degree of dispersion preferred by Malayalis.

Rajahmundry's increase during the decade was only 4 per cent above that of its district. This however bears out the theory, for Rajahmundry is not so great a centre of road communications as for example Bezwada. No great road communications lead up the Godavari river whereas a trunk road takes off from Bezwada up by the Kistna westwards to Hyderabad. From Guntur also a road runs west and north to join this Bezwada-Hyderabad route. Rajahmundry's road communications have therefore been less susceptible of rapid extension.

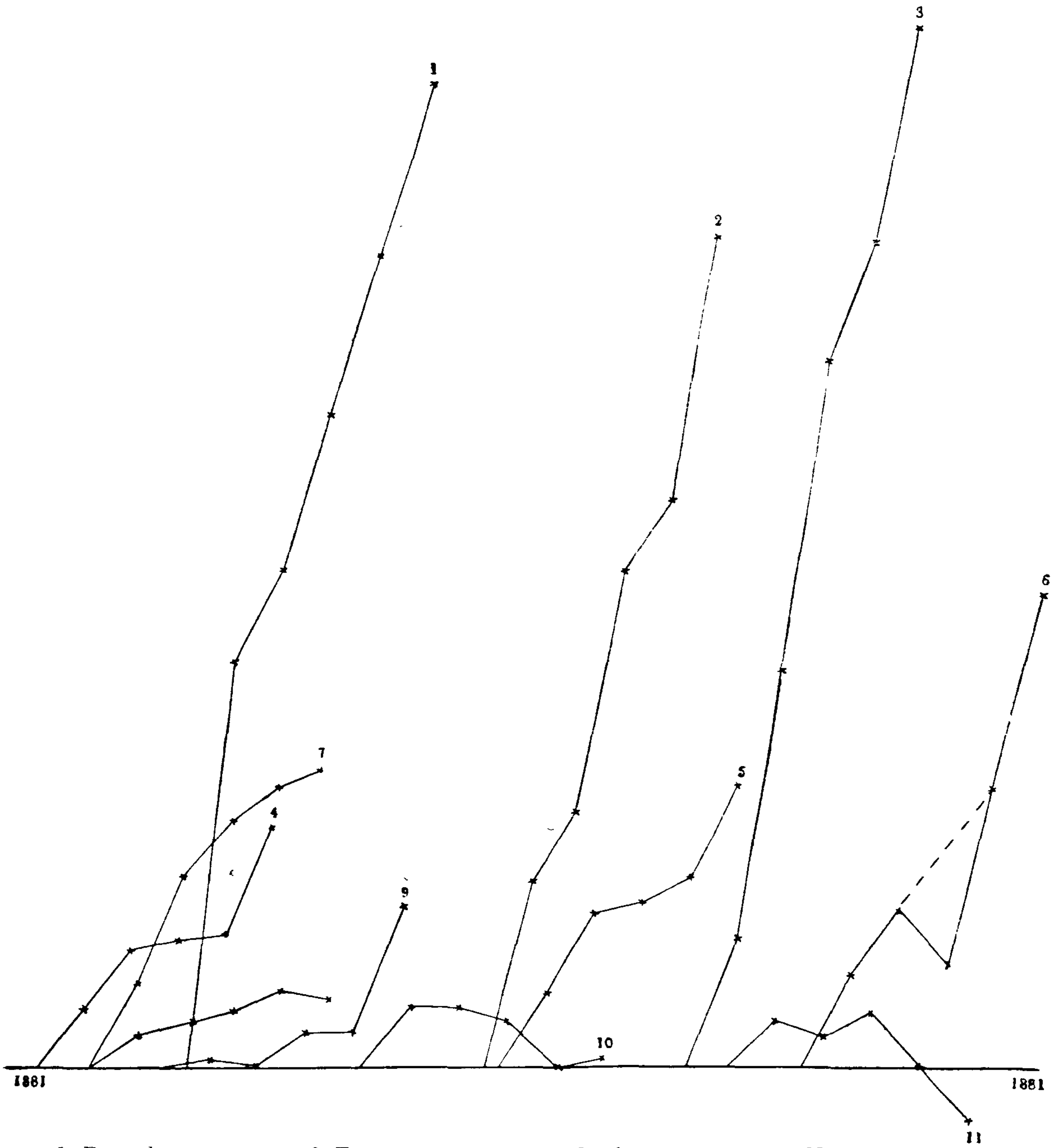
19. A study of Table IV produces interesting comparisons with the above table, and matter for reflection on the reasons for relative growth. In Tinnevelly for example are many towns which have increased little or have actually decreased during the decade as compared with the pronounced growth of Tenkasi, Tuticorin or Kovilpatti. Sermadevi, Srivaikuntam, Alwar Tirunagari, Kallidaikurichi, Sivagiri are instances. There seems to be a limiting size for the small town possessing no particular advantages in communications or industry. This limit is not uniform or even fixed but is itself a function of district conditions and density. It is higher for example in Tinnevelly than in Kurnool. There is something asymptotic in all population growth in the absence of disturbing circumstances and this is often well illustrated by such towns. Srivilliputtur in Tinnevelly, Vedarannıyam and others in Tanjore, are examples. In some cases the maximum seem to have been reached and population history is likely to be a series of oscillations round it. Chicacole (Ganjam), Palkonda (Vizagapatam), Sermadevi and Srivaikuntam (Tinnevelly) are among those which seem to have reached this stage.

The entry of a fresh factor may raise the maximum, just as supercharging raises the maximum speed attainable from a motor engine. With the arrival of such a factor a town long practically stationary in population may take a marked step forward, increase till the revised maximum is attained and then regain its former quiescence. Such factors would be improvement in communications, or new discoveries or developments in industry for which the town was suited. The table given in paragraph 16 offers marked examples. Bodinayakanur in 1921 was considerably less than in 1901 and but for the arrival of the railway it is unlikely that it would have taken anything like a 30 per cent jump in the last decade. Periyakulam had in the forty years 1881–1921 increased its population by 32 persons only and its previous maximum in 1911 was only 2,000 above its lowest figure. Its jump of 40 per cent in the last decade is therefore significant. Arcot had been practically stationary since 1881, its increase in 40 years being but 7 per cent. During 1921–31 this became 24. Sivaganga has been already mentioned. The diagram below illustrates the growth of different categories of towns. Tiruppur indicates the strongly tonic effects of new trade and industry developments plus a central position for communications. Arcot typifies the town long stationary which takes a new access of growth. Srivilliputtur exemplifies the slowing growth of a town approaching its maximum. Palkonda, Chicacole and Sivakasi show the town which has reached and is now hovering about its maximum.

The logarithmic diagram below will serve to sum up what has gone before and give a general picture by types of urban increase :—

Diagram (Logarithmic).

Rates of Growth since 1881 for typical Madras towns.
(Each curve begins at 1881 and ends at 1931.)



1. Bezwada.	2. Tiruppur.	3. Tenali.	4. Madras.
5. Calicut.	6. Coimbatore.*	7. Srivilliputtur.	8. Palkonda.
9. Arcot.	10. Chicacole.	11. Negapatam,	

* — — — course if 1911, a year of plague exodus, is omitted.

All curves start from 1881 on the baseline. These curves are not intended to depict absolute populations else of course they could not start from the same base. Their object is to show comparative rates of growth. The stages represented by the various censuses are shown by crosses. The dotted portion for Coimbatore indicates the more probable actual course, since the 1911 drop was caused only by a plague exodus. The modes of increase are thrown into vivid relief by the differing shapes of the curves. The rocket-like growth of Bezwada, Tiruppur and Tenali contrasts with the slowing ascent of Srivilliputtur, the scarcely perceptible rise of Palkonda and the apparent decline of Negapatam and Chicacole. Arcot's new spasm of growth is well brought out by the sudden thrust in the last decade.

20. The small table below gives in descending order the number of persons per 100 occupied houses for each city :— **Persons per 100 houses.**

1. Madras ..	.. 877	9. Ellore ..	.. 622	16. Vizagapatam	.. 552
2. Rajahmundry	.. 793	10. Kumbakonam	.. 605	17. Coimbatore	.. 534
3. Mangalore	.. 727	11. Guntur ..	.. 589	18. Trichinopoly	.. 529
4. Madura ..	.. 723	12. Salem ..	.. 572	19. Cocanada	.. 517
5. Vellore ..	.. 709	13. Tanjore ..	.. 562	20. Palamcottah	.. 443
6. Conjeeveram	.. 682	14. Masulipatam	.. 559	21. Tinnevelly	.. 419
7. Calicut ..	.. 671	15. Cuddalore	.. 557	22. Tuticorin	.. 414
8. Bezwada ..	.. 637				

Madras seems to have an unenviable priority with well over 8 persons per house, Rajahmundry being a good second with close on 8. Madura, Mangalore and Vellore come some distance behind while the Tinnevelly cities figure creditably at the bottom with less than 450 persons per 100 houses. These figures are however subject to a qualification already indicated which is of particular applicability in the presidency town. A marked feature of Madras is the street-dweller and squatter. A midnight tour of the central and northern parts of the town any fine night would disclose sleeping persons on every sidewalk. These persons are not all tramps by any means ; the majority indeed are ordinary citizens in everything but the possession of a roof. Such a possession has no great inducement for a population of floating labour in a mild and pleasant climate, in a city where houses are scarce and rents often exorbitant. The figure for Madras may be indicative of a higher number of persons per dwelling than is desirable but before it could be taken as an accurate guide, the street-dwellers and squatters would have to be deducted from the total population used in striking the average. Madura's figure involves to some extent a similar qualification, for to this sacred city of the south wanderers resort in large numbers throughout the year and the numbers of those who have no house and do not desire one is more considerable than is usually realized. After all a house is a responsibility as well as an expense. It is also a tie and to a family which takes work as it comes and is always prepared to move, as to a pilgrim whose gaze is fixed on eternity, the possession of some doubtful walls and an unsafe roof holds out no particular attraction. Rajahmundry's figure is probably the most revealing of all, and it may be that a higher degree of effective congestion exists in this prosperous river town than in any other city in the presidency. Parts of Vellore are squalid and insanitary and congestion to a marked extent obtains in certain wards. The low figure of Coimbatore, a rapidly growing industrial town is to its credit and reflects the great advance in housing carried on during the last decade in this prosperous city. The low figures from Tinnevelly and Palamcottah reflect their closer connection with rural conditions. Tuticorin's figure comes at first with some surprise. During the decade over 2,500 houses were brought within the municipal bounds and this has probably contributed to lowering the average per house.

21. The number of persons per house varies in cities with the ward. The statement in the margin shows (in order of ward maximum) the maximum and minimum number of persons per ten houses and the proportion of wards in which the number is less than 60. Clearly there is no necessary connection between size and congestion, for one of the presidency's largest cities, Trichinopoly, ranks among the lowest both for maximum and minimum and in only one ward returns a figure of over 6 persons per house. Salem too comes in the lower half and Madura is not second but fifth. The last column of the table is the most interesting. Cocanada and Rajahmundry are little removed in maximum ward density but whereas nearly half the former's wards have less than six persons per house, no ward in the latter can claim this distinction. Similarly, Vellore, Guntur and Coimbatore have practically the same maximum but the last column differs widely and the

City.	Maximum.	Minimum.	Proportion of wards in which figure is less than 60.
Madras	128	44	2/30
Rajahmundry ..	113	60	0/24
Cocanada	99	43	10/24
Calicut	94	54	3/24
Madura	87	55	1/18
Bezwada	85	55	4/10
Kumbakonam ..	82	46	11/24
Mangalore	81	58	1/9
Vellore	78	63	0/7
Guntur	78	41	9/21
Coimbatore	76	44	17/25
Salem	72	48	11/18
Vizagapatam	71	48	5/9
Ellore	68	51	3/10
Masulipatam	65	48	10/12
Cuddalore	63	48	5/7
Trichinopoly	61	45	17/18
Tuticorin	58	38	8/8
Tinnevelly	49	37	11/11
Palamcottah	49	41	6/6

largest city has the most creditable record. Vellore's figures show less variation than any except Tinnevelly and Palamcottah and indicate a greater uniformity of conditions. It has no area giving less than 6 and none with more than 8 persons per house. Rajahmundry's maximum of over 11 persons per house is sufficiently striking but when taken in conjunction with a figure of 9 or above in five other wards and 8 or above in seven more and the fact that no ward returns less than 6 shows clearly the high degree of congestion that exists. The Tinnevelly cities firmly anchored at the bottom show how much more closely they reflect district and residential conditions than those ordinarily associated with the term ' city '.

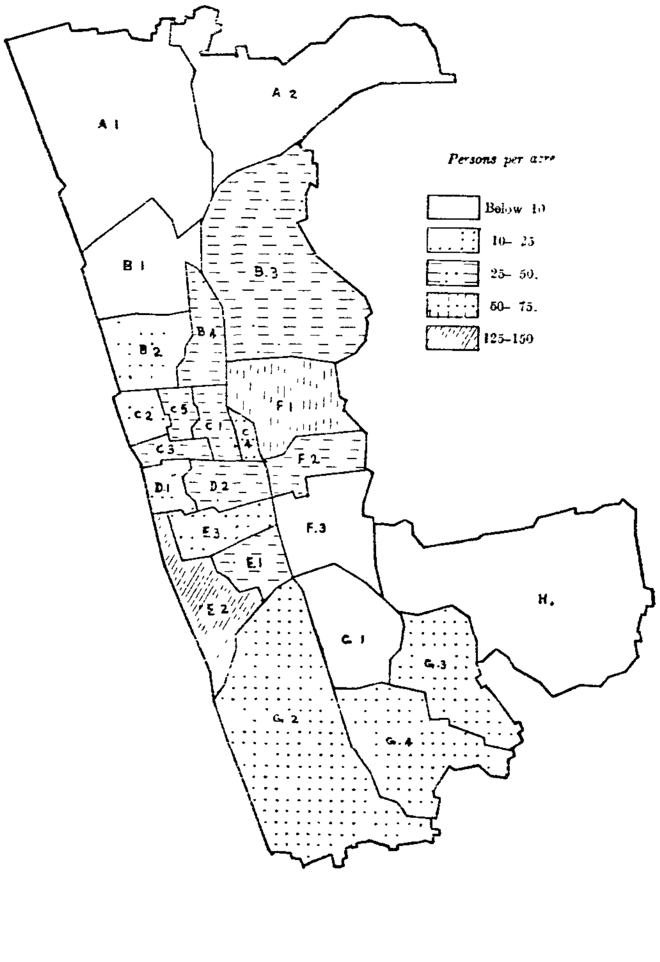
The range is as might be expected greatest in Madras where prosperous residential suburbs produce a low minimum to set against the congestion of the true city area. The large range for Calicut indicates the difference between its central and its outlying regions, some of which last present rather the normal Malabar picture of detached country dwellings than one of houses side by side in streets.

22. Subsidiary table *iv* to Chapter I gives among other details for the 22 cities, their density per square mile. One is surprised to see Salem with the highest figure, for Salem does not immediately strike one as possessing the city characteristic of marked density. Ward figures would probably show wide variations but it has been impossible to extract ward area figures from the municipal authorities. That Madura should exceed Madras does not surprise, on the other hand, for this ancient town possesses all the characteristics of a city, among them considerable congestion. Were it not for the large empty area north of the Vaigai, Madura's figure would be much higher. Rajahmundry in the fourth place with over twice the density of its neighbour Cocanada shows the difference between the riverside town and the seaport of East Godavari. Calicut's low figure is due to large suburbs.

For cities effective density can really be gauged only from ward figures. Unfortunately it has not been found possible to get accurate ward areas in some cases and space hardly permits of diagrams for all. Illustration is given below to the cases of Madura and Calicut; ward congestion for all has been treated from the aspect of persons per house.

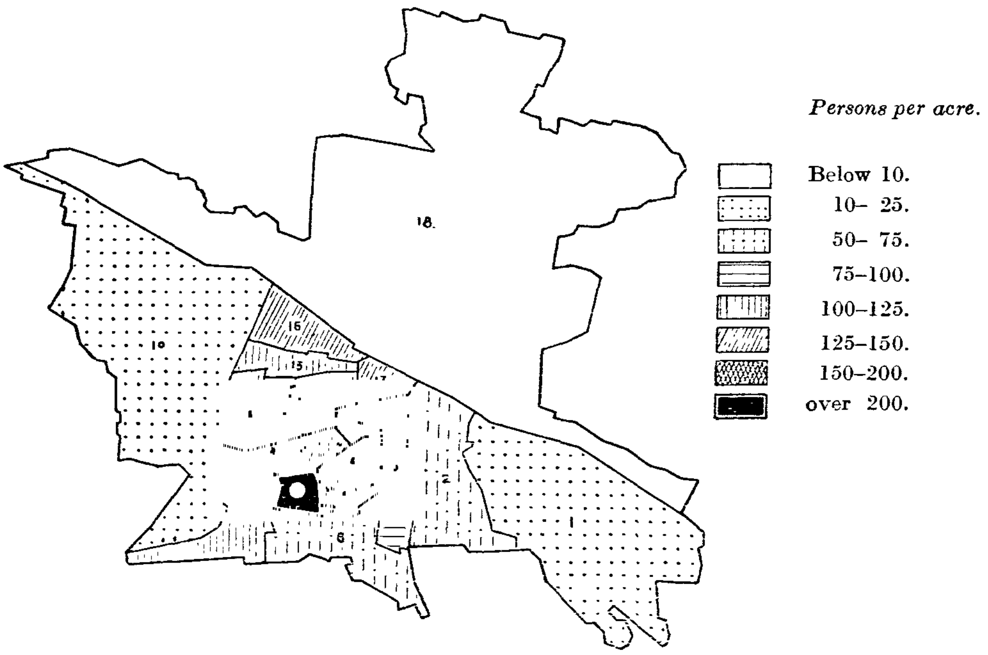
CALICUT CITY.

DENSITY BY WARDS.



MADURA CITY.

DENSITY BY WARDS.



In the city density diagrams above closeness in shading increases with density and the same pattern series has been applied. A glance therefore shows comparative conditions. Madura has a higher run of density than any of the others. Two-thirds of its wards have over 100 persons per acre or the equivalent of 64,000 per square mile. Only two-fifths of Madras' wards and one twenty-fourth of Calicut's reach this standard. Madura alone has a ward of over 200 persons per acre, equivalent to over 1¼ lakhs per square mile.

Both diagrams but particularly that for Calicut illustrate the characteristic weakening of population density towards the city margins. The extremes of Calicut differ little from the normal Malabar countryside. The same could hardly be said of Madura but there is nevertheless a pronounced difference between its centre and its margins with observable gradation between. The nature of the huge extension over the Vaigai is clearly brought out by its coloration in the diagram. This northern suburb is not real Madura yet and it will be long before it is. Its actual density is under seven persons per acre, a figure which reflects the area occupied by tank and park.

23. What has gone before has related almost solely to towns. Yet these, as has been already said, house only an eighth of the presidency's population. Some might produce as analogy a medical examination where pathological symptoms receive close consideration while what is normal passes without comment. There is something in such an analogy but village life is no more ideal in Madras than elsewhere. Seven-eighths of the population living in villages may convey an impression of the ' wide, open spaces '. These spaces exist in plenty, it is true, but by no means always or often within the village. Madras towns can offer some notable examples of congestion and insanitary huddling ; some indications of this have already been given. It is by no means sure however that the worst specimens of housing in the presidency do not come from certain rural areas, notably the wealthy delta tracts on the circars coast and in Tanjore. Where land is dear, housing tends to be bad and land fetches a notable value in delta districts where irrigation is assured. Every foot of ground is grudged to the village-site and even a comparatively well-to-do landowner will exist in an almost squalor that surprises the stranger. If this is so with an actual owner of land it can be imagined what is the condition of the farm labourer who in many cases also belongs to the so-called depressed classes. In Tanjore, these last form the backbone of the agricultural labouring population and are even yet little removed from a state of agrestic serfdom. One of the most commendable and valuable activities of the Madras Labour Department during the decade has been the compulsory acquisition of sites on which houses could be built for these people and they be introduced to something approaching

decent conditions of livelihood. It is significant that the chief fields of this particular activity are in the delta districts above mentioned. Rural congestion varies elsewhere. It is probably at its least and general housing conditions at their best on the west coast, for there as has already been pointed out, habitations tend to cover the whole countryside rather than to concentrate. Ganjam too, and particularly the Oriya part, is a land of frequent small villages. The Deccan has larger villages but they generally give an impression of more space than a Tamil or Telugu unit. It is unfortunately difficult to give density figures for village life because as has already been said, the village in our statistics represents an administrative unit, not an actual group of habitations. Area figures for villages represent the entire ground covered by the village and the fields associated with it for administration purposes. In every country poverty and bad housing go together. This is so in India but a further element enters by the presence of the depressed classes. These people are forced in the villages and often even in towns to live in a hamlet apart. Its site is rarely the most attractive and space is grudged. Little interest is taken in the community and its habitat is rarely visited. A lack of public spirit or ordinary hopefulness is an almost inevitable consequence of such treatment and this added to the other elements tending to produce squalor has the result that the ' paracheris ' of this presidency may safely be counted upon to produce its worst examples of housing.

24. In order to obtain some idea of how effective density on actual village-sites compared with ward densities in cities I asked the tahsildars of certain representative taluks to give me area and population figures for a few actual village-sites in their taluks, the samples being taken so as to illustrate extremes of congestion. There is something of the approximate in the population factor of the density but it is not enough to affect the general value of the figures which are given in the margin with maximum and minimum and average figures for Madras, Madura and Calicut added for comparison.

District.	Taluk.	Village density per acre. High.	Village density per acre. Low.
Ganjam Plains	Ghumsur	131	54
Vizagapatam Plains ..	Sarvasiddhi ..	97	62
East Godavari Plains ..	Ramachandrapuram.	73	60
West Godavari	Tanuku	92	29
Guntur	Bapatla	119	36
Kurnool	Koilkuntla	105	16
North Arcot	Arni	89	69
	Walajah	65	38
Coimbatore	Dharapuram ..	85	39
	Pollachi	66	24
Tanjore	Papanasam	60	16
	Tanjore	190	13
Madura	Tirumangalam ..	217	16
Tinnevelly	Kovilpatti	74	32
	Srivaikuntam ..	96	36
Madras City	....	175	11*
Madura City	....	213	7†
Calicut City	....	137	6‡

* (Average 77). † (Average 108.) ‡ (Average 29).

None of the cities can produce a density equal to that of Villur or Sattangudi in Tirumangalam taluk of Madura. Both are good sized villages of over 3,500 inhabitants, the former almost reaching 5,000, so the average is not an artificial figure taken from a handful of people on a cent of land. The other high village densities come also from places of normal village size though smaller than the two above named. It is the villages returning the low densities which are on occasion not very representative, e.g., the Madura minimum springs from about $1\frac{2}{3}$ acres and 25 people.

Tanjore taluk produces one village-site of 0·36 acre on which 187 people are packed, equivalent to 517 per acre, and another with 190 people on 0·40 acre, or 480 persons per acre. These rates are far above anything in the table. Though the smallness of the area tends to produce an exaggerated density effect, the congestion indicated is unmistakable.

Of the 48 villages dealt with, 4 yield a density of 16 per acre. Five of Madras' 30 wards, and 7 of Calicut's 24 are below this, but only 2 of Madura's 18. Even Madura's proportion at the low figure is greater.

A high minimum in such a collection of figures is of some interest. Arni and Ramachandrapuram whose low village densities are respectively 69 and 60 per acre are taluks of high average density, 799 and 953 respectively per square mile.

Without laying too much stress on these figures they may be taken as showing that effective congestion is as likely to be met with in villages as in cities; the essential difference is that the villager can get out of his village quickly while the inhabitant of a city cannot so easily escape.

i.—Distribution of the Population between towns and villages.

Natural division.	Population per Town.	Population per Village.	Number per 1,000 residing in Towns.	Number per 1,000 residing in Villages.	Number per 1,000 of urban population residing in towns with a population of 20,000 and over.	10,000 to 20,000.	5,000 to 10,000.	Under 5,000.	Number per 1,000 of rural population residing in villages with a population of 5,000 and over.	2,000 to 5,000.	500 to 2,000.	Under 500
1	2	3	4	5	6	7	8	9	10	11	12	13
Province ..	***18,333***	***784***	***136***	***864***	***572***	***245***	***174***	***9***	***79***	***328***	***469***	***124***
Agency	10,525	134	6	994	..	1,000	..	..	4	36	161	799
East Coast, North	16,343	928	113	887	476	321	200	3	56	344	485	115
Deccan	12,186	1,024	108	892	468	271	223	38	33	301	585	80
East Coast, Central ..	24,074	975	153	847	653	221	122	4	59	311	532	98
East Coast, South	16,643	905	195	805	552	240	203	5	81	362	455	102
West Coast	22,570	1,784	89	911	725	125	140	10	228	407	335	30

ii.—Number per 1,000 of the total population and of each main religion who live in towns.

Natural divisions.	Number per 1,000 who live in towns. Population.	Hindu.	Muslim.	Christian.	Tribal.	Jain.	Buddhist.	Zoroastrian.	Jew.
1	2	3	4	5	6	7	8	9	10
Province ..	***136***	***124***	***254***	***207***	***1***	***229***	***598***	***957***	***1,000***
Agency	6	7	73	12	..	..	..	..	..
East Coast, North	113	107	276	114	12	851	397	979	1,000
Deccan	108	83	287	96	..	413	813	1,000	..
East Coast, Central	153	136	467	349	..	236	736	962	1,000
East Coast, South	195	181	406	216	..	845	607	1,000	1,000
West Coast	89	74	92	304	82	58	281	928	1,000

iii.—Towns classified by population.

Class of town.	Towns of each class in 1931.	Proportion to total urban population.	Females per 1,000 Males.	Variation per cent in the population of towns as classed at previous censuses. 1921 to 1931.	1911 to 1921.	1901 to 1911.	1891 to 1901.	1881 to 1891.	Increase per cent in urban population of each class from 1881 to 1931. (a) In towns as classed in 1881.	(b) In the total of each class in 1931 as compared with the corresponding total in 1881.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Total[1] ..	**350**	**100·0**	**994**	**16·3**	**1·8**	**14·5**	**24·8**	**13·7**	**73·1**	**120·0**
I. 100,000 and over.	4	16·8	926	23·6	1·3	7·8	12·6	11·5	59·5	164·7
II. 50,000—100,000.	18	18·2	977	20·9	— 2 6	— 5·1	9·7	12·8	57·2	144·3
III. 20,000—50,000 ..	49	22·2	998	21·5	6 4	11·7	12 8	12·7	75·2	135·3
IV. 10,000—20,000 ..	115	24·5	1,021	9·9	— 2·3	3·8	18·0	10·7	70·7	168·1
V. 5,000—10,000 ..	149	17·5	1,039	10 5	4·5	6·8	37·2	14·8	82·3	40·7
VI. Under 5,000 ..	15	0·8	1,045	20·6	19·8	26·6	85 0	50·5	163·5	—68·2

iv.—Cities—Chief Figures.

Cities.	Popn. 1931.	Density.	Females per 1,000 males.	Numbers foreign born per 1,000.	Literates per 1,000. M.	Literates per 1,000. F.	Percentage variation. 21–31.	11–21.	01–11.	91–01.	81–91.	71–81.	71–31
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Madras	647,230	22,249	897	348·0	433	170	22·8	1·6	1·8	12·6	11·5	2·1	62·8
Madura	182,018	22,555	985	184·9	444	94	31·0	2·8	26 6	21·2	18 5	42 0	248·5
Trichinopoly	142,843	17,657	957	217 1	485	152	18·6	— 2·5	17 9	15 6	7·3	10·3	86·6
Salem	102,179	23,065	973	66 8	339	72	95·6	— 11 7	—16·2	4 3	33 6	1 3	104·3
Calicut	99,273	9,218	945	32·2	428	181	20·6	5·0	1·9	16·5	15 8	19.0	107·0
Coimbatore	95,198	12,693	909	141·4	417	142	44·7	9·3	— 11·4	14·4	19·0	10·4	109·0
Tanjore	66,889	8,722	991	117·9	499	136	11·6	— 0·7	4 3	6 4	— 0·6	4 9	28·2
Mangalore	66,756	14,387	925	62·0	415	222	23 9	11·3	9 8	7 8	27 5	8 0	124·7
Cocanada	65,952	8,412	957	130 7	313	103	23 6	— 1·4	12·5	18 6	40·5	61 8	269·7
Conjeeveram	65,258	16,690	1,016	160·1	450	99	6·3	13·9	16·7	8·5	14 2	0·1	74·8
Guntur	65,179	12,160	962	86 3	338	110	35·3	18·9	31·4	32 0	18 9	8·9	261·4
Rajahmundry ..	63,526	18,575	980	225·2	355	115	18 1	11·1	33 0	28·2	15·6	24·4	221 8
Kumbakonam ..	62,317	14,099	1,027	105·9	523	126	2 7	— 6·1	8·3	9 9	8 4	12·7	40·2
Bezwada	60,427	11,274	908	404·6	363	122	36·8	34·4	35·7	16·8	122·2	16·3	652 9
Tuticorin	60,395	16,965	980	68 3	483	151	35·7	10 8	43·3	11·7	54·2	54 1	471·7
Cuddalore	59,057	4,607	976	111·5	369	98	16·9	— 10·7	8·3	10·3	8·7	8·1	46·6
Ellore	57,342	6,683	1,032	327 6	307	102	25·0	21·3	12 8	14·1	17·1	— 1·5	125 0
Vizagapatam	57,303	9,503	946	107·8	352	108	28·2	3·0	6·2	18 6	13·9	— 5·9	78 0
Vellore	57,265	14,245	1,000	108·6	421	156	14·1	0·9	14 3	— 3·1	19·8	— 1·4	50·6
Tinnevelly	57,078	15,944	1,068	37·8	472	108	6·1	4·3	10·8	62·6	6·7	10·5	135·2
Masulipatam ..	56,928	6,154	945	120 4	389	146	29·6	4·3	6·6	1·8	10·7	— 3·1	57·3
Palamcottah	51,990	8,665	1,132	21·4	443	109	11·5	3·9	13·6	111·6	4·0	0·1	189·7

CHAPTER III.

BIRTHPLACE AND MIGRATION.

Reference to statistics and their value. THE statistics dealt with here will be found in Imperial Table VI. This is one of the tables for which separate information is given for cities. The table differs markedly from that for 1921 and previous censuses. As a result of retrenchment measures the fact of enumeration within the district of birth enters the record but no other district detail appears. The general principle adopted was to give separate mention to any region favoured by Madrasi emigrants and to group all others together by convenient broad classes. So the five Madras States, Hyderabad, Mysore, Burma, Ceylon and Malaya receive separate mention, for their associations with Madras are considerable. Contiguous provinces, Bihar and Orissa, Central Provinces and Bombay, are likely to furnish a greater element to Madras than the more distant such as the Punjab ; they therefore form a separate group while the remainder of India is lumped together, the States and British India being kept distinct. In sections B to F of the table, however, which deal with beyond-India birthplace, more detail is given, for each head is broken into British Dominions and elsewhere and these in turn give detail for more important countries. Thus the contributions of five African provinces receive district and city distribution.

The subsidiary tables also are affected by the change in procedure and appear in briefer form. From one point of view, the reduction in detail may be regretted in that the completeness of the enquiry is necessarily restricted. On the whole, however, it is no great lack and possibly in this direction as in others the contractions imposed by retrenchment yield all the material required for reasonable enquiry. The district frontier is so rarely a social border that the following up of district birthplace detail is hardly worth the sorting effort it involves. The essential facts of every Madras district are the same, viz., 90 per cent or more of those enumerated in it were born in it, most of the remainder were born just over the district border and whether the small residue of presidency-born hail from this or that district is of little importance and not worth the trouble of extracting. Where cities are concerned, especially developing towns such as Coimbatore, Vizagapatam, Bezwada and Madras, birthplace detail is of greater interest and at succeeding censuses although tabulation of district birthplace might well be dispensed with for the ordinary population, its retention could be considered for cities. The sorting for these would affect about 2½ millions population out of a presumptive 50 million total. A final argument for the condensed form is that it has enabled detail for each district and city to be exhibited in a single set of columns on a single page, a considerable convenience.

2. The Governments of Fiji, Seychelles, Mauritius and other regions known to attract the Madrasi emigrant helped to the best of their ability. Not all held censuses and none took district (some not even province) details of birthplace. Retrenchment in Ceylon confined the census there to Colombo city. By considerable correspondence with the Ceylon Emigration Commissioners (Messrs. Bowden and Innes-Baillie), however, to whom I am very much indebted for information and assistance, a close estimate was arrived at of Madrasi-born in Ceylon. The figures obtained from these countries of Madrasis within their bounds on the 26th February 1931 are embodied in the subsidiary tables. The natural population ultimately arrived at is 49,092,350. Actually, the last three figures have no real value in any such determination. The percentage increase of this population over the natural population ascertained in 1921 is 10·8, a remarkable approximation to the rate of increase in the recorded population over the decade, viz., 10·3. The variation is in the right direction, for elements have been used for natural population in 1931 that were not available in 1921 and did not figure in the natural population arrived at then.

3. Details in the flyleaf contain references to some countries unrepresented or non-existent in 1921, e.g., Palestine, Iraq, the Irish Free State, Finland and Poland. Palestine appears under instructions within British Dominions while

Iraq which is no longer under mandate appears as beyond them. Not unnaturally, the foreign contributions have greatly increased since 1921. That time followed too closely after the war for European elements, particularly those of Germany, to have recovered their normal standing.

4. An attempt was made to achieve at this census an enumeration of Indians on the high seas. A special schedule was produced and arrangements made to collect and deal with the returns. So far as the schedules received in Madras were concerned, the vessels came within the range of the ordinary census as having been all within Indian waters. In such an enumeration it is essential to make sure before issuing the special schedule that the vessel will be beyond Indian waters on the census night. Indians on high seas.

5. To some extent, birthplace enumeration under-represents the amount of district movement. When checking enumeration in a railway colony I found that of the six children of a railway employee, five had been born in different districts representing his various halting places in his official progress. Only two of these districts appeared however in the enumerator's original record. This was not so much the enumerator's fault as the effect of a common tendency to attribute to the district of present residence the birthplace of the older children. Actually, however, it is only in communities that take to movement that such a tendency could have any effect, while as the general statistics show, the amount of movement among the mass of the population is very small. District movement.

6. Another general consideration is the presence of perennial centres of pilgrimage or of particular festivals at or about the census date. The latter ought not to have had much influence since the census date is carefully chosen to avoid as far as possible all festival congregations. The first however exercises a continuing effect. Thus in Chittoor district, Tirupati, Tiruttani and Kalahasti always attract some pilgrims. Mahasivarathri was only eleven days before the census date and it is not impossible that there may have been a residual element of Saivite pilgrims not yet departed from their favourite shrine when the census date arrived. Such centres are found all over South India from Tinnevelly up to Southern Ganjam.

7. The chief local origins of Madras contributions to overseas emigration are indicated by the comparative popularity of birthplaces. The Malayan contingent is much stronger in the Arcots, Tanjore, Trichinopoly and Chingleput. The southern Tamil area, with a marked predominance in Trichinopoly and Tanjore, furnishes nearly all the Ceylon birthplaces. Burma is well represented in Madras, Chingleput and Ramnad, with a sprinkling on the Circars coast. South African birthplaces are nearly all from Tamil districts. No plains district lacks a Travancore-Cochin representation and even the Vizagapatam Agency has both. This indicates how persons of these States find their way to even the most unlikely places. The central position of Mysore and of Hyderabad and their greater community of language with the presidency make a contribution from them to all districts not surprising. A glance at a map will show Hyderabad as the geographical focus of the circars, and eastern Mysore as that of the peninsula proper. Immigration.

A general aspect that appears almost throughout is the increase in the number of persons born in Ceylon, Burma, Mauritius and Natal. The depression of trade at the end of the decade resulted in lessened employment for Indians in other countries. The anti-Indian agitation in Burma which showed itself in the violent riots in Rangoon sent back to their native land a good many Indians apprehensive of future worse developments. The South African policy of repatriation finds an inevitable reflection in the numbers of enumerated persons born there. It is necessary to be on the look out for artificial causes of immigration. Immigrants into Salem district for example total 37,645, 24,230 of them into Mettur taluk alone. This spells simply the great irrigation work which has been under construction there during the latter part of the decade. The same circumstance accounts in part for the increase in the numbers born in the United Kingdom and Ireland, for a considerable number of European engineers became of necessity resident in Mettur. A similar circumstance exists in the Nilgiris where the hydro-electric construction works created a

colony of 2,500 people in an area with a former population of a few estate residents only. The coolies on this work were mostly north-country men; hence an increase in immigrants from beyond the presidency. The number of persons in Salem district born in continental Europe increased considerably. This is partly due to the elevation of Salem into a diocese of the Roman Catholic mission and the introduction in consequence of a considerable number of French priests. Development of convent and other education in Yercaud with foreign-born instructors has also contributed to this rise.

The presence of survey and settlement parties in such districts as South Kanara affects the number of immigrants. The Nilgiris are a new and empty region in course of being opened up. It is only to be expected therefore that the immigrant quota should be considerable. The advent of the bus and speedy access to the plateau must have contributed greatly to increasing the number of immigrants to such resorts as Ootacamund. Railways often tend whether in construction or after opening to introduce strangers into a district; the unit of railway administration has no regard for the administrative district unit. Thus the construction of new lines in West Godavari and the elevation of Bhimavaram into a railway junction of some importance brought in many railway employees and therefore many strangers. A peculiar circumstance from North Arcot is the large increase in the number of persons from French India. This was the result of election trouble in Pondicherry. The defeated party at such times generally absents itself from Pondicherry until matters are quieter and its own prospects less gloomy. An increase in the number of Europeans from the same district was due to the development of fruit planting (pomegranates, oranges, etc.) in the Elagiri Hills. The concentration of all South Indian workshops at Golden Rock near Trichinopoly meant the transfer of some thousands of persons from the former works at Negapatam and Podanur with an obvious effect on the census returns of Trichinopoly district.

Homeborn proportions.

8. The form laid down for Subsidiary Table *i* requires the entry of actual figures. Absolute figures in such cases do not, however, afford the best illustration of the importance of respective birthplace components and this table would be better put on the per 1,000 basis used elsewhere. Such figures have been extracted and are shown below :—

	District-born per 1,000.		
	Persons.	Males.	Females.
Province	**969**	969	969
Agency	**983**	984	983
Ganjam	**994**	994	994
Vizagapatam	**991**	990	991
East Godavari	**931**	935	927
East Coast, North	**971**	971	971
Ganjam	**993**	993	994
Vizagapatam	**992**	991	992
East Godavari	**967**	967	967
West Godavari	**923**	923	923
Kistna	**926**	928	923
Guntur	**977**	976	978
Nellore	**980**	982	978
Deccan	**957**	959	953
Cuddapah	**976**	980	973
Kurnool	**957**	959	955
Banganapalle	**892**	900	884
Bellary	**948**	947	949
Sandur	**648**	667	628
Anantapur	**951**	957	945

	District-born per 1,000.		
	Persons.	Males.	Females.
East Coast, Central	**951**	952	951
Madras	**652**	630	677
Chingleput	**945**	946	944
Chittoor	**966**	972	960
North Arcot	**966**	970	962
Salem	**970**	972	968
Coimbatore	**971**	968	974
South Arcot	**973**	975	971
East Coast, South	**962**	963	961
Tanjore	**966**	966	965
Trichinopoly	**938**	942	934
Pudukottai	**908**	927	891
Madura	**962**	964	960
Ramnad	**967**	966	968
Tinnevelly	**988**	987	989
West Coast	**978**	973	983
Nilgiris	**574**	533	622
Malabar	**990**	988	992
South Kanara	**992**	989	995

There emerges at once an enormously preponderating homeborn composition in almost every presidency unit. Only in four cases does this element fall below 90 per cent and none of these is normal. Two are small States surrounded by British districts, the third is a developing hill area where immigration is pronounced and the fourth is the presidency town itself whose presence among the districts serves here as elsewhere rather to confuse than to illustrate. In six cases, the homeborn element is over 99 per cent. These are at the extreme flanks of the presidency in Ganjam-Vizagapatam and Malabar-South Kanara. One would not expect the Agency areas to attract

strangers in appreciable numbers and the Ganjam and Vizagapatam plains show here as elsewhere their comparative remoteness and isolation. The Ganjam Agency homeborn element over both sexes is the highest in the presidency. That for the Godavari Agency is much less and illustrates the difference in dimensions. This Agency is much smaller than the others and a large part of it consists of a narrow tongue of land running along the north bank of the Godavari river. This tongue was until less than 30 years ago a part of the Central Provinces and it is an illustration of that former connection that nine persons in 1,000 of the Agency's population were born in the Central Provinces. Across the Godavari lies Hyderabad and 22 persons per 1,000 hail from that State. Thirty-seven per 1,000 come from other districts in the presidency, the vast bulk of these undoubtedly from East Godavari plains. The female element is stronger than the male in the Hyderabad and plains contributions but weaker than the male from the Central Provinces. This seems to show that brides are more frequently sought from the former areas.

Agency.

East Coast, North.

9. The 971 persons per 1,000 homeborn in the East Coast North division are evenly divided between the sexes. There is a marked difference in the district contributions. Ganjam and Vizagapatam plains follow closely their adjoining agencies in the magnitude of the homeborn contingent. Nellore and Guntur have figures also above the division average, though not so pronounced. West Godavari and Kistna fall markedly below it. These two districts include the area between the Godavari and the Kistna rivers, with the exception of a small Agency fragment in East Godavari. Essentially they are a single tract and this unity found expression till 1925 in their combination in the single district, Kistna. Movement of population in this region has even less regard for district frontiers than elsewhere and its division into two districts was bound to produce an apparent decrease in the homeborn in each case. The decrease would be enhanced in the case of West Godavari by the circumstance that many people when asked their birthplace must have replied in the form familiar from long usage, ' Kistna ', for the villager is a conservative person and would not readily see why a birthplace for many years established as Kistna should suddenly become something else. The effect of this last circumstance in Kistna would be rather to increase the homeborn element. In Kistna there appears a strong contribution from Hyderabad amounting to 18 per 1,000 of the district population. This element is very much less marked in West Godavari.

Deccan.

10. Two of the four districts constituting the Deccan division have within their bounds small Indian States which for the purposes of this Imperial Table rank as separate provinces. Actually the state-district frontier has nothing of the effect of a normal district separation. The States being so much smaller, it is their homeborn element which is appreciably influenced. The contributions of Banganapalle and Sandur respectively to Kurnool and Bellary are much less marked than those of Hyderabad State in both cases and Mysore in the case of Bellary. Kurnool and Bellary, particularly the former, have a long common frontier with the Nizam's Dominions of which 130 years ago they formed a part and to this day there is much intercommunication. Eleven persons in 1,000 enumerated in Bellary were born in Hyderabad and 10 in Mysore, while over Bellary's third foreign frontier, Bombay, came six persons per 1,000. Anantapur also returns a strong Mysore contribution amounting to 9 per 1,000 of its population. Three-fifths of this was women and it is noticeable that in Mysore contributions, the female element invariably predominates in these border districts, whereas in Kurnool, the male contribution from Hyderabad exceeds the female.

Sandur and Banganapalle figures are affected by the fact already mentioned, that each is an enclave in a British district. Twenty-nine per cent of the enumerated in Sandur were born in Bellary and 10 per cent in Banganapalle hailed from Kurnool. Sandur, a polyglot little State with many ethnic contributions to its population, returns a remarkable variety of birthplaces, Bombay, Hyderabad and Mysore being all well represented. It is much less homogeneous than Banganapalle.

East Coast Central. 11. In the East Coast Central division, the averages are as always affected by the unusual conditions of Madras City. The close parallelism of Salem and Coimbatore indicates their separation in many ways from the eastern districts of the division. Chittoor and North Arcot keep together and Chingleput follows in proportion of homeborn. The Chittoor homeborn proportion is probably diminished by persons of Kuppam taluk returning their district of birth as North Arcot, of which till recently Kuppam formed part. Chittoor and North Arcot have a fair Mysore contribution, stronger in the first than in the second. In North Arcot this contribution is unusual in that the male element predominates. **East Coast South.** In the East Coast South division, Trichinopoly offers much the lowest figure of homeborn. This is due to mainly a stronger element born in other Asiatic countries, Ceylon and the Straits Settlements, and a contingent from Pudukkottai. Pudukkottai has contributed 17,641 persons to the three districts which enclose it and its is a rather artificial boundary similar to that of Sandur and Banganapalle. Tanjore and South Arcot have strong contributions from French India in which the equality of the sexes shows it a normal trans-border movement. Here again, no social frontier exists, whatever political conditions may be.

West Coast. 12. The West Coast division offers here as elsewhere pronounced contrasts between the Nilgiris and the other two constituents. The Nilgiris is the most artificial of all Madras units, not excepting Madras City. Only 574 per 1,000 of its population are homeborn. The female and male ratios differ more widely than in any other case. To 1,000 males and females in the Nilgiris, the chief contributions are—

	Males.	Females.		Males.	Females.
District	533	622	British India excluding Madras	11	85
Rest of the Province ..	335	270			
Madras States	9	3	United Kingdom and Ireland	12	6
Indian States	96	9			

The marked sex disproportion among the immigrants illustrates the nature of this district with its plantations and immigrant labour and shows also how predominantly this labour is male. A curious circumstance is that of the small number of people born in Burma nearly all should be women.

That most of the Nilgiris' 33·8 per cent increase were immigrants appears clearly from a comparison of its homeborn elements of 1921 and 1931 :—

	Total.	Males.	Females.		Total.	Males.	Females.
1931 ..	574	533	622	1921 ..	681	652	714

That immigrants were more male than female appears from the greater decrease in the male rate. The Mysore contribution to this district has doubled itself during the decade. The contribution from India beyond Madras has increased, indicating the sources on which the Nilgiris has been drawing. An interesting point is that while the male element born in the United Kingdom and Ireland is practically the same as in 1921, the female element is less. This probably reflects the three weeks earlier census date in 1931. There is a great difference in hill stations between February and March and the 1921 census probably found more European women up for the usual stay in the hills than did its 1931 successor.

Malabar and South Kanara share with the most northerly circar districts the honour of sticking closest to home. From these districts, males emigrate freely ; West Coast men and especially Malayalis, are to be found throughout South India and their prevalence has on occasion given rise to criticism from those with whom they compete for employment. Their women however do not emigrate and the region does not itself attract immigrants, from language difficulties and climatic peculiarities ; hence the high figure of homeborn. The highest rate anywhere recorded is for females enumerated in South Kanara, 99½ per cent of whom were born in their district.

13. Ordinarily immigrants should be more female than male, for it is the wife who leaves her district to join her husband, not vice versa. The proportions per 1,000 show that for most districts the female homeborn element is in fact less. In Ganjam plains, Vizagapatam, Guntur, Ramnad and Tinnevelly it is slightly greater, in Malabar, Kanara and Coimbatore rather more so and

in Madras, and the Nilgiris pronouncedly so. The conditions leading to a higher female figure have already been indicated. To a region of marked industrial or other development male immigrants come in larger numbers and come alone. Such an influx would tend to lower the male element of homeborn. Madras, the Nilgiris and Coimbatore are areas in which this might be expected. Madras is merely a large city with all the circumstances of exaggerated immigration; particularly where immigration is concerned it should be considered along with other cities, not with districts. Coimbatore and the Nilgiris are in process of rapid industrial or plantation development.

Emigration.

14. The table in the margin compares Madras-born enumerated elsewhere in 1921 and 1931. The first impression is of pronounced increase. In no case are the totals less in the later year despite the existence of conditions adverse to emigration. The most notable figure is Malaya's and well over half a million Madrasis were found within that region at census time. The Bombay emigration shows the most marked increase, the Madras emigrants thither having quadrupled. No Ceylon census was taken this year, so the 1931 figure is blank but since over 700,000 Indians were in 1930 on Ceylon estates alone it may be safely concluded that the Ceylon figure too would have shown a great increase.

Serial number.	Province or Country.	Number of Madras born.		Number of females to 1,000 males.	
		1931.	1921.	1931.	1921.
1	Malaya	582,625	366,048	502	..
2	Burma	297,543	273,000	233	208
3	Mysore	294,024	269,675	819	820
4	Bombay	179,457	44,039	597	567
5	Hyderabad	132,952	84.158	297	617
6	Travancore	104,277	58,277	899	1,018
7	Assam	57,448	54.536	852	1.019
8	Cochin	54,614	26.388	1.363	1.125
9	Bengal	42,437	28.595	809	936
10	Bihar and Orissa	36,457	35,927	1.166	1,275
11	Central Provinces and Berar.	12,878	..	837	..
12	Ceylon	..	447,334	..	..
13	Coorg	..	22,509	..	347

Sex ratios have varied little except in the case of Hyderabad and to a less extent Assam, Travancore and Bengal. In all these the female-male ratio is smaller in 1931 than in 1921. The ratio so far as Indian Provinces are concerned varies with proximity and length of common frontier, Burma yielding the lowest and the Central Provinces the highest.

15. The causes which go to produce emigration are many and varied. Apart from unemployment, poor seasons, pressure upon the land and other great fundamental causes, the proximity of prominent trade routes or ports undoubtedly stimulates emigration. The great flow from Tinnevelly and Ramnad districts to Ceylon is an illustration. The contribution from these districts to the island is mostly to non-assisted or private emigration as it may be termed. With communication routes long established, organized recruitment is not needed there to induce people to go overseas. Similarly the longstanding British-India steamer circuit, Cocanada-Vizagapatam-Gopalpur-Rangoon, must have contributed greatly to familiarizing the people of the circars districts with the idea of Burma and so stimulated an emigration flow thither. Madras has long been in regular connection with Burma and Malaya, and Negapatam also with the latter place. Thus a movement to these areas from the districts which look on the two ports, the Arcots, Chingleput and Tanjore, is not an unnatural consequence. When movement is made easier it becomes more frequent, and improvements in transport within a country probably act as a stimulus to emigration just as they undoubtedly develop movement within it. The additions to the South Indian Railway system during the past decade have probably tended to increase the emigration flow from the south. The joining up of Pollachi and Dindigul is an instance of a railway development whose effects may have reached much farther than is realized.

The fundamental causes of emigration indicated above are dealt with later. A further point to be noted is that it is possible for an emigration habit to arise not necessarily connected with financial or seasonal stress at home. This existed to some extent in Europe as regards America towards the end of the 19th century and undoubtedly exists in South India and the Circars coast touching the movement to Ceylon, Malaya and Burma.

'Assisted' emigration.

16. Emigration from Madras falls into two broad categories. In one, Indians are recruited through agents and forwarded by these to the employment areas. Such assisted movement constitutes 'emigration' for the purposes

of the Emigration Act which came into force in 1923. This restriction of the term is not very fortunate for there exists from the presidency, and always will, a strong current which is simply emigration in its natural sense, a movement abroad of people who depart when they like and return when they like ; no agency assists their passage or controls their stay in the new country. In the remarks which follow, ' emigration ' has generally been used in the broader sense. The chief effects of the Act of 1922 were to control the departure of any persons from British India who were assisted to do so by any person other than a relative. Such departure was restricted to particular ports at which officers called Protectors of Emigrants were appointed to see to the working of the Act and proper application of the rules. The rules framed under the Act had as one definite intention to encourage family as distinct from individual recruitment and for this purpose a restriction was laid down that not more than one in five assisted emigrants should be unmarried or unaccompanied males. Ceylon was permanently exempted from this regulation as emigration to that country had always been practically a family affair. Towards the end of the decade Malaya was also exempted.

Hindus per 1,000 population.	Original.	Adjusted.
Trichinopoly	908	920
Tanjore	900	905
Pudukottai	917	925
Ramnad	881	885
Tinnevelly	830	840

No religion details are available (except for Malaya) for Madrasis enumerated elsewhere but considerations of the castes which migrate show that emigration from Madras is essentially a Hindu phenomenon. The Hindu proportion therefore in the population of the chief contributing districts may be said to have been affected thereby. Taking the figure of the chief contributing districts, and assuming 99 per cent (a figure based on statements of castes emigrating but probably a fair approximation) of estimated absentees at census time to be Hindus, the effects on the 1931 proportions are as given in the margin.

17. As a result of the retrenchment measures carried out already referred to, no subsidiary table has been prepared for this year corresponding to No. 3 of 1921. Since the natural division particulars were not retained in sorting it was not possible to draw up a table based upon them.

General migration increase.

18. Subsidiary Table *iv* shows the development of movement into and from the province. In every case, the excess of the from-Madras move has increased in the decade. The difference between Burmese-born found in Madras and Madras-born in Burma is now 294,000 in favour of the latter as against 271,000 in 1921. The percentage increase in this difference is 8·5 which compares with the 10·3 increase in general population. The movement into Hyderabad as compared with that from Hyderabad to Madras has increased markedly, the 1931 figure being almost twice that for 1921. The development is even more marked in the case of Cochin where the 1931 figure is much more than twice that of 1921. This subsidiary table differs considerably from that for 1921 as a result of the retrenchment measures and apart from Burma and the five principal States in South India, no individual movement can be studied. The particulars given represent those which cover most Madras movement. The sign in columns 4 and 7 is almost uniformly plus which indicates that both kinds of movement have increased considerably. The only notable decrease is in immigration from contiguous provinces. The 1921 immigration from Bihar and Orissa was undoubtedly peculiar and it is due to the return of more normal conditions that this apparent marked change is due. The number of Travancoreans in Madras has doubled in the decade. Section B of the subsidiary table treats Banganapalle, Sandur and Pudukkottai as other parts of India for the purpose of migration. Hence the difference in figures between A and B. C treats solely of the three small States. For these three States the general tendency is also towards increased movement in both directions. The foreign contributions have all increased while the States' contribution to Madras has increased by 50 per cent and to Burma by 60 per cent. Emigration to Indian States however shows a decline. The figures in this part of the table are small and little deduction of value can be made from them.

19. Movement of Madrasis within the province might be reduced to three broad categories. One is a natural social movement which takes no account

of so artificial a matter as the ordinary district boundary. When a man seeks a wife he cares not whether she belongs to his district or the one next door. Between 22nd February and 2nd March 1931, ten days in which the census date lay near the middle, were three auspicious moments for Hindu marriages and cross-border movement was possibly rather intensified in consequence. This type of emigration is of little real importance and it is for that reason that tabulation of district birthplace is probably not worth while. The second broad category is the usual drift of labour towards cities and developing districts. This is best illustrated by the position of such cities as Madras and Coimbatore and by districts where constructional or other developing activity is proceeding, e.g., Salem where the Mettur dam is under construction, and the Nilgiris. The third and most important is the regular set of labour to the estates in the south-west. Here is a regular feature of presidency life meriting study and attention.

Most of this is handled by the United Planters' Association of Southern India (popularly known as Upasi) and Colonel Brock who is in charge of the labour side of this organization was good enough to give me all assistance in his power. A labour census was taken on the Association estates on the 15th December 1930. This yielded the following figures of estate labour :— **Emigration to planting districts.**

District.	Total. 1930.	Total. 1928.	District.	Total. 1930.	Total. 1928.
Coimbatore	31,809	32,422	Nilgiris	23,253	25,020
Malabar	16,839	16,473	Salem	2,831	4,095

At the time of the population census the labourers on estates in South India would probably number four-fifths of this December maximum. The actual number of persons passing through the estates is on the other hand above this December figure for there is always some of the labour going to or returning from its villages and being replaced.

This census is taken for obvious reasons at a period at which all types of plantations are working at full effort. In February, when the population census was taken, a good number of the employees on tea and the majority of those on rubber estates would be back at their villages as this is the quiet time for these products. In general, labour on these estates bears a marked resemblance to more sedentary forms of activity in which the twelve months include a definite period of holiday, for it is the rule for these workers to return to their village for periods each year varying from 2 to 3 months, but generally 2. The labour comes by families and returns year after year, frequently to the same estate. This introduces a marked feature to this Association's labour recruitment, viz., that it is dealing with predominantly the same labour every year. It has thus become a familiar body in its recruiting areas. This familiarity is indicated by the name 'Upasipuram' given to a new village in Tinnevelly built largely by ex-labourers on estates. Practically all the labour recruited for these estates is drawn from the depressed classes. A small proportion even hails from criminal tribes. The general system of recruitment is through kanganis or licensed recruiters. The period of recruitment is generally 10 months on tea and rubber estates and 6–10 on coffee estates. Local labour is also employed as required. The two great recruiting areas are (1) a compact region (which also contributes heavily to Ceylon and Malaya) bisected by the Kaveri river composed of the southern taluks of Salem, the eastern taluks of Coimbatore, the western taluks of Trichinopoly and the northern taluks of Madura. This area feeds mainly the Coimbatore plantations and from it comes half the plantation labour in that district. Tinnevelly and western Ramnad are another recruiting region also feeding Coimbatore. Malabar and the Nilgiris are the chief suppliers of the plantations in these two districts and Salem supplies all the Salem plantations. In addition, British India supplies three-fourths of the labour on plantations in the adjoining States. Tinnevelly itself furnishes half the plantation labour in Travancore and with Madura and Ramnad, over three-fourths. South Kanara supplies nearly all plantation labour in Mysore and nearly half that of Coorg.

The following figures show the district sources of plantation labour in the four districts above mentioned :—

	1930.	1928.		1930.	1928.		1930.	1928
Coimbatore—			Malabar—			Nilgiris—*cont.*		
Coimbatore ..	14,330	14,511	Coimbatore ..	3,257	3,500	Malabar ..	4,040	6,990
Madura ..	5,466	4,653	South Kanara.	3,326	3,808	Nilgiris ..	3,765	6,503
Malabar ..	1,223	1,714	Malabar ..	8,998	7,992	Salem ..	2,950	3,516
Salem ..	3,820	4,253				Salem—		
Tinnevelly ..	1,993	1,440	Nilgiris—			Salem ..	2,825	4,095
Trichinopoly.	3,541	4,559	Coimbatore ..	10,919	7,602			

The corresponding totals of labour engaged in December 1928 run above those for 1930, indicating the contraction in plantation activities following upon the slump.

Districts so far afield as Anantapur, Chittoor and Ganjam also supply labour but to a very much smaller extent. The presence of such men however is noteworthy.

Madrasis in Travancore. 20. To the Madras-born enumerated in Travancore, Tinnevelly contributed over 60,000, Madura and Ramnad over 20,000 and South Malabar 7,000. Other contributors over 1,000 were in order of magnitude Chingleput, Madras City, South Kanara, Trichinopoly, Coimbatore, South Arcot and Salem. The Tinnevelly and Chingleput contributions were almost 50–50 in sex. The Malabar-Kanara contingents had twice as many males as females. The Madura males were in great and in the other contingents in less excess.

Andamans. Of the 2,754 Madras-born enumerated in the Andamans and Nicobars, 1,731 came from Malabar and 299 from Madras City. Other district contingents were small and widespread.

Emigration to Assam and Burma. 21. Emigration from Madras to other parts of India can also be grouped under three heads. The first is similar to that mentioned already, a social or trading trans-frontier movement which need not detain us. The second points to the tea gardens in Assam and the third to Burma. These two last differ largely in their composition. The tea gardens element has drawn on many parts of the presidency but has particularly favoured the northern circars and one of the primitive tribes inhabiting the southern Ganjam and Vizagapatam hills, the Saora, has contributed notably to this movement. The Burmese emigration is largely a circars phenomenon and the existence of Burma is undoubtedly an important feature in the ordinary life of the labouring classes there. Burmese development has had a profound influence on the Telugu coastal districts and the presence of 300,000 Madrasis in Burma at the time of the census is an indication of the importance of the movement. Whereas

Burma. in Assam the Madrasi is as it were specialized, he fulfils in Burma a wide variety of functions. He tills the paddy fields. He mans the railways. He handles cargoes at Rangoon. He functions largely in domestic service; clerical employment claims him and there is nothing to which he cannot put his hand with acceptance. Whatever may be the Burmese attitude towards the South Indian labour influx, it is idle and unfair to dismiss the Telugu or Tamil as a mere intruder in the province across the Bay. The Indian passengers returning in May 1931 from Rangoon as a result of the anti-Indian riots were 3,000 or 40 per cent more than in the corresponding month of 1930. This increase was a more or less regular feature of the earlier months of 1931. That despite the unfavourable conditions at the end of the decade, the lack of employment and anti-Indian troubles, the Madras-born enumerated in Burma should be 25,000 more numerous than in 1921 indicates the hold that this country has upon Madras labour.

No district details of birthplace figures are available. Applying the 1921 proportions which there is no reason to believe have appreciably altered, district contributions would be in round figures :—

Ganjam	85,000	Tanjore	25,000	Madura	11,000
Vizagapatam ..	63,000	Ramnad	23,000	Tinnevelly .. } Malabar .. .. }	8,000
Godavari ..	44,000	Kistna	15,000		

The figures for Tanjore, Ramnad and Tinnevelly have been applied in the treatment given to these districts later on. As no control is exercised over emigration to Burma no yearly figures are available to give indications of the extent of the flow. The figures indicate that approximately 5 per cent of

the 1921 population of Ganjam, 3 per cent for Vizagapatam, and 3 per cent for Godavari (which may be taken as equivalent to East Godavari) were at census time absent in Burma.

The sex ratio still shows a great preponderance of males. The Madrasis enumerated in Burma showed only 233 females per 1,000 males. This is above 1921's 208 but expressive of conditions. No one who had seen emigrants crowding on board the British-India steamers could wonder at the paucity of women among Burma Madrasis.

22. Fifty-seven thousand four hundred and forty-eight Madrasis were enumerated in Assam with a sex ratio of 852 females per 1,000 males. The ratio is much below that of 1921 (1,019) but is markedly superior to that obtaining in Burma or any other Indian province except Bihar and Orissa. When one considers Assam's remoteness from Madras so high a ratio indicates something more like settlement than the normal male migration in search of work. And something of settlement there is about conditions on the tea estates which in Assam absorb most Madrasi immigrants. **Assam.**

The figures in the margin supplied by Mr. Steele, the Tea Districts Labour Association Agent at Berhampur, show how essentially emigration to Assam is a family movement and account for the high sex ratio of Madrasis there.

Season.	Emigrants.		
	In Family Groups.	Single Males.	Single Females.
1926–27	5,369	244	216
1927–28	1,783	148	117
1928–29	1,470	136	127

Emigration to Assam is conducted mainly through the Tea Districts Labour Association which maintains agencies in the northern and central parts of the presidency. The statement below gives recruitment by this body for the ten years of the decade :—

Seasons.	Total.	Seasons.	Total.	Seasons.	Total.
1920–21	2,696	1925–26	9,628	1930–31 from 1st September 1930 to 30th June 1931	7,279
1921–22	2,954	1926–27	10,547		
1922–23	4,493	1927–28	6,780		
1923–24	18,242	1928–29	8,103		
1924–25	8,125	1929–30	7,714		

In latter years there has been some extension into the Ceded Districts and Guntur, an average of 350–400 being taken from each region. This emigration however is predominantly a circars phenomenon and within these circars largely one of primitive tribes. The alterations from time to time in the manner of compilation of the statistics make it impossible to give yearly figures for particular areas but statistics for the last four years are given for certain primitive tribes :—

Seasons.	Saoras.	Konds.	Others.	Total.	Seasons.	Saoras.	Konds.	Others.	Total.
1927–28	1,146	156	742	2,044	1929–30	833	146	487	1,466
1928–29	1,061	123	541	1,725	1930–31	1,009	155	476	1,640

When it is realized that the total recruitment from Ganjam in 1928-29 was 1,736 and that most Saoras recruited are from this district the relative strength of the Saora contribution is apparent. During 1925–26 and 1926–27, of the 6,000 labourers sent from the circars to Assam, three-quarters could be safely classed as Saoras. Before 1925–26 the recruiting figure was 1,500–2,000 ; the large increase was the result of the Madras Government's action in enforcing forest reservation policies in the Saora area. Assam afforded an outlet and economic salvation to a people at odds with their circumstances. Later, the application of forest laws was mitigated and the Saora emigration decreased. In 1929 the Tea Districts Labour Association introduced for Saoras only, a system of short term recruitment. This was for two years, repatriation being guaranteed at the expiry.

23. Emigration of Madrasis beyond British India has taken a wide range but in two directions its importance far outweighs that in any other. These are towards Malaya and Ceylon. The two differ widely. Malaya emigration is still essentially a male phenomenon whereas Ceylon has been taken as it were to the Tamil heart ; Ceylon is no more foreign to the Trichinopoly labourer than Madura or Ramnad and very much less so than Malabar or Mysore. Tamil emigration to Ceylon is no new phenomenon but goes back a century and more. In 1837 the number of immigrant Tamil labourers employed in Ceylon coffee estates was estimated at 10,000. The industry developed rapidly and so did the demand for Tamil labour from South India. In 1846 its presence was **Emigration to Ceylon.**

estimated at 80,000 and in 1855 at 128,000 persons. Thus, 70 years ago, South India was contributing heavily to Ceylon's industry and prosperity. 1877, the famous famine year in India, produced a tally of Tamil labourers in the island of no fewer than 380,000. This was more than the Ceylon estates could support at that time but it is an indication of how readily the Tamil sought Ceylon even 50 years ago. His emigration then lacked the comfort and security obtaining today. The emigrant had to walk to the coastal ports, had to wait there till ships turned up, the voyage might last for days, and even once landed in Ceylon he had arduous marches before him. As the Ceylon Emigration Commissioner has remarked, ' it is a testimony to the doggedness of the Tamil that these emigrants surmounted the difficulties they did and travelled hundreds of miles on foot over inhospitable country '. Steady improvements in organization attended this emigration movement and halting places were established at an average every 8 miles along the North Road in Ceylon. Hospitals were provided and the route patrolled. In 1899 this ingress was finally given up in favour of the direct sea route to Colombo. The institution of regular steamer services had brought this route into favour and in 1898, 117,000 arrived at Colombo from Tuticorin. The final abandonment of the North Road route was brought about by the development of plague in an epidemic form in South India and the necessity for quarantine control involved. The first quarantine camp was established at Tuticorin in 1898 where labourers for estates and miscellaneous passengers were examined. Coincident with this, a great development in emigration control took place in the institution of the tin-ticket system. When a labourer produced one of these tickets, the officials franked him to his estate by road and rail, costs being recovered later from the employer. This was a great advance. No large advances of money need henceforth be paid to unreliable agencies and both employers and employed benefited from the removal of exactions and acceleration of transit. The history of Tamil emigration to Ceylon is one of steadily increasing control. Even before 1860, it was felt that more should be done to help the emigrants and in 1859 a scheme was put forward for a compulsory cess on Ceylon employers to establish a fund from which labour supply from India would be administered, controlled and improved. This proposal did not come to fruition then but the ideas behind it received expression in the tin-ticket system and finally in the Ceylon Labour Commission established in 1904. This body was supported by a voluntary cess on Ceylon estates and received from its earliest years a contribution from the Ceylon Government. At this point comes the establishment of a Ceylon camp at Trichinopoly from which now all assisted emigration to the colony is run.

24. Thus when the Indian Emigration Act came into force in 1923, a ready-made and competent agency existed to administer the rules and the new legislation brought no particular difficulties and produced no changes in the flow of emigration. The general procedure is that the professional recruiter is excluded. No one can recruit for Ceylon who is not an Indian of the labouring classes and licensed actually in the employ of the person in Ceylon for whom he is recruiting. Such men will naturally recruit in the area and circle of their own personal contact, i.e., their own village neighbourhood and caste. Recruits are brought before the headman of the village and cannot move on till he has certified that there is no objection. They go to the central depot at Trichinopoly where further tests are made. Then comes Mandapam where six days' halt is required. This not only satisfies quarantine requirements but gives ample time for Indian Protectors of Emigrants to verify that no undesirable recruitment is at work. In this camp piped water, water-borne sewage and close supervision help to make as healthy and attractive a station as any in South India. Figures of emigrants for the decade are in the margin.

Total Number of Estate Labourers passing each year through Mandapam.

Year.		Total.	Depressed classes.*	Percentage.
1921	..	25,344	8,568	34
1922	..	78,106	29,921	38
1923	..	90,289	35,316	39
1924	..	153,989	71,441	47
1925	..	125,585	52,400	42
1926	..	101,860	41,089	40
1927	..	161,027	64,969	40
1928	..	133,712	51,593	39
1929	..	105,095	42,177	40
1930	..	91,422	34,710	38
Total	..	**1,066,429**	**432,184**	**41**

Percentage of depressed classes to total, 41.

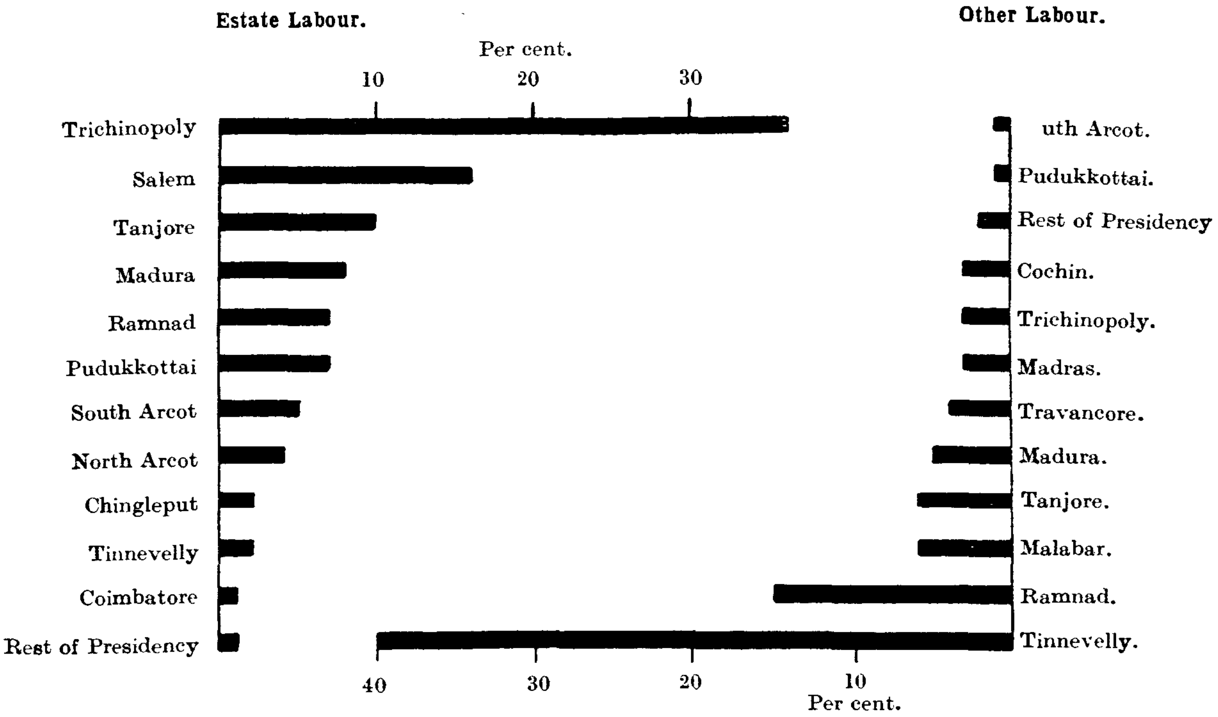
* The figures in the table refer solely to castes treated as untouchable for the purposes of Imperial Table XVII but if other contributions which seem to belong also to Depressed Classes are included, the figures are appreciably enhanced.

25. South Indian emigration to Ceylon is, as already indicated, a Tamil phenomenon. It can be broken into two branches, assisted emigration and private travel. The difference between the two is nowhere better expressed than in the different proportions of women. In emigration to the estates women constitute over 25 per cent of the total number and with children and infants make up a total equal to that of the adult males. In the private emigration women make only 10 per cent. The latter type of emigration is much more akin to that to Burma, i.e. it consists mostly of single men going for comparatively short periods, intending to return as soon as possible with money saved. The estate labour is practically a transference of family and home. Most of the non-assisted recruited Indians who go to Ceylon are of the ordinary labouring classes, many are traders. Hindus and Muhammadans are to be found in every town and big village near the planting districts. Almost half of their number live within Colombo municipality and a fair quota in Kandy. This non-assisted Indian population moves far more often than estate labourers. The Tinnevelly district is its great source. This applies particularly to the labourers but also to the petty shopkeepers and traders. Eighty per cent of this class of emigration is from Tinnevelly and Travancore and 95 per cent of it is male. Figures are in the margin.

Total Number of other than Estate Labourers travelling to Ceylon each year.

Year.		Total.	Year.		Total.
1921	..	82,767	1926	..	114,421
1922	..	82,880	1927	..	125,739
1923	..	83,258	1928	..	138,157
1924	..	88,787	1929	..	133,046
1925	..	102,292	1930	..	114,669

Relative District Contributions to Overseas Emigration—**Ceylon.**



26. The diagram illustrates the chief district contributions to Ceylon emigration over the decade. It is based on figures supplied by the Ceylon Emigration Commission. In the earlier years of the decade the southern Tamil districts, Trichinopoly, Madura, Ramnad, Tanjore and Pudukkottai, supplied 80 per cent of estate emigrants and 75 per cent of non-assisted emigrants passing through Mandapam. From 1924 the Salem contribution became pronounced, and in that year constituted by itself 20 per cent of the total number of emigrants. The Arcots came to the fore about the same time and remained steady contributors. Trichinopoly and Salem continued however to supply the bulk of emigrants during the remainder of the decade. In 1927, for example, they furnished 75,000 out of 161,000. In 1930 they furnished 51,000 out of 91,000 passing through Mandapam. The non-assisted workers passing through Mandapam return a great variety of districts from all over India but the heaviest contributor is uniformly Ramnad, with Tanjore, **District contributions.**

Trichinopoly, Malabar and Madura following close together with each about two-fifths of Ramnad's contribution. On an average, these districts contribute two-thirds of this class of emigration year by year.

The Tuticorin non-assisted emigration is a pronouncedly Tinnevelly feature, this district regularly contributing two-thirds of the total passing through the port. Malabar is the only other Madras district appreciably represented.

Indian population on estates.

27. The small table below gives the Indian population on estates for the years 1925 to 1930 :—

Year.		Total.	Men.	Women.	Children.	Year.		Total.	Men.	Women.	Children.
1925	..	**618.149**	217.841	210,242	190.066	1928	..	**739.316**	244.603	236,304	258.409
1926	..	**666.931**	226,680	219.540	220,711	1929	..	**740,130**	242.161	232.996	264.973
1927	..	**719.552**	241,200	234,131	244,221	1930	..	**734.747**	240,390	230,710	263,647

The figures show that regularly almost three-quarters of a million Indians have been resident on Ceylon estates. The drop in the totals for 1930 represents contraction of labour following the depression which arrived at the end of the decade. These figures in themselves give some idea of Ceylon's importance to South India. They do not include the non-assisted Indian emigrant element in Ceylon at census time. This in 1921 was 137,600 and is not likely to be less today. All over, therefore, the probabilities are that approaching a million Madrasis are to be found at any time in the island colony. On the estates they are well looked after and figures show that over two-thirds of the male and over one-third of the female Indian children on estates are attending school.

Caste contributions.

28. This Ceylon emigration is a Tamil phenomenon; it is also an Adi-Dravida phenomenon, for in the earlier years of the decade depressed classes contributed half of the total emigration and later never less than a third. Other castes contributing regularly are Agambadias, Ambalakarans, Vellalas, Vanniyans, Naickans, Goundans and Kallars ; but these added together do not exceed a half or at most two-thirds of the Adi-Dravida contribution. In 1930, depressed classes contributed 38 per cent of the estate emigration or 34,700 out of 91,400. The return movement to India is for obvious reasons not so closely documented as the emigration but figures for estate labourers exist for the ten years of the decade. Returns rose from 23,000 in 1921 to 101,000 in 1929. This corresponded to the large increase in total numbers recruited from 25,334 in 1921 to 153,989 in 1924, the larger emigration showing itself after a lag of some years in larger returns. The ratio of old labourers to new is difficult to assess with certainty but is approximately 1 : 6. Figures for 1930 show May, June and July as markedly the heaviest and January as markedly the least contributors to estate emigration. For other passengers, the recruitment is more distributed. The peak comes at approximately the same time, June-July. There is no such marked minimum as obtains in the estate recruitment in January. The months May to July are those in South India when agricultural work is at a minimum, while November-February corresponds with the season of greatest agricultural effort. Consequently emigration is at its least then.

Approximate figures of estate labourers returning to India *via* Dhanushkodi are given in the small statement in the margin. The chief jump in returns seems to correspond with a three-year lag to the jump in emigration. The returns equal approximately two-thirds the departures. No final conclusions can be drawn from this ratio but it is not without indicative value.

Estate Labourers returning to India via Dhanushkodi.

Year.		Total.	Year.		Total.
1921	..	23,152	1928	..	93,596
1922	..	46.285	1929	..	101,228
1923	..	51.672	1930	..	98,728
1924	..	56.118			
1925	..	53.263	Total	..	**672,878**
1926	..	61,325			
1927	..	87,481			

Indians enumerated in Malaya.

29. The Malayan census officer was good enough to send me information regarding Madrasis enumerated in Malaya—

	Population.	Males.	Females.	Sex ratio.		Population.	Males.	Females.	Sex ratio.
Total Indians..	642,009	421,028	202,981	502	Telugus ..	32,541	18,948	13,593	717
Tamils ..	514,959	339,926	175,033	515	Malayalis ..	35,125	29,037	6,088	210

The great majority of the Indians enumerated in Malaya are therefore from the south, 908 per 1,000 being their contribution. The only other considerable component is Punjabis who number 31,001. No details of birthplace are forthcoming and it is probable that some were Malaya-born or at any rate not Madras-born. The great bulk must have been born in the presidency however for the Madras movement to Malaya is one of short term and does not in any sense approach settlement. The sex ratios are of interest. It is not possible to discover the 1921 ratio but 502 compares very favourably with Burma's 233 and indicates that the provisions of the emigration rules discouraging unlimited emigration of single or unaccompanied males have had some effect. The sex ratios of the components show that apparently Telugu emigration is much more and Malayali much less of a family affair than the rest.

Other statistics given are of Indians as a whole but having regard to the great predominance of the South Indian contribution the figures may be taken as adequate illustration of its circumstances. The following age-group figures indicate the nature of this emigration :—

Age-group.	Per 1,000 of total Indians. Population.	Males.	Females.	Females per 1,000 males.	Age-group.	Per 1,000 of total Indians. Population.	Males.	Females.	Females per 1,000 males.
0–10 ..	182	136	279	990	40–55 ..	119	138	79	278
10–20 ..	141	124	178	693	55 and over.	15	14	13	421
20–40 ..	543	588	451	370					

Five hundred and eighty-eight out of 1,000 Indian males in Malaya are between 20–40, the main working period. The proportion of female children at the lowest age period is much greater. The proportions of the aged are practically the same. The almost parity of the sexes at the lowest age-group indicates normal family events. Between 10–20 the proportion is still higher than the average but sinks rapidly during the main working period to rise again at the extremity 55 and over. The sex ratio is markedly greater among Christians (613) and Hindus (525) than among Muhammadans (178). Most of the Muhammadans come from North India and Madras Muslims can contribute very little. Three hundred and sixty-four per 1,000 males and 342 per 1,000 females are engaged in agriculture. If the males returned as having no gainful occupation are omitted, the proportion of working males engaged in agriculture rises to 458. Thus almost half the working males follow agricultural pursuits of some kind. The next specific component is commerce with rather over a sixth of agriculture's quota. Transport and communication follow closely, then personal service ; industries come a long way behind. Unspecified and indeterminate occupations account for a considerable quota, 215 per 1,000 being returned under this head.

Nature of the emigration.

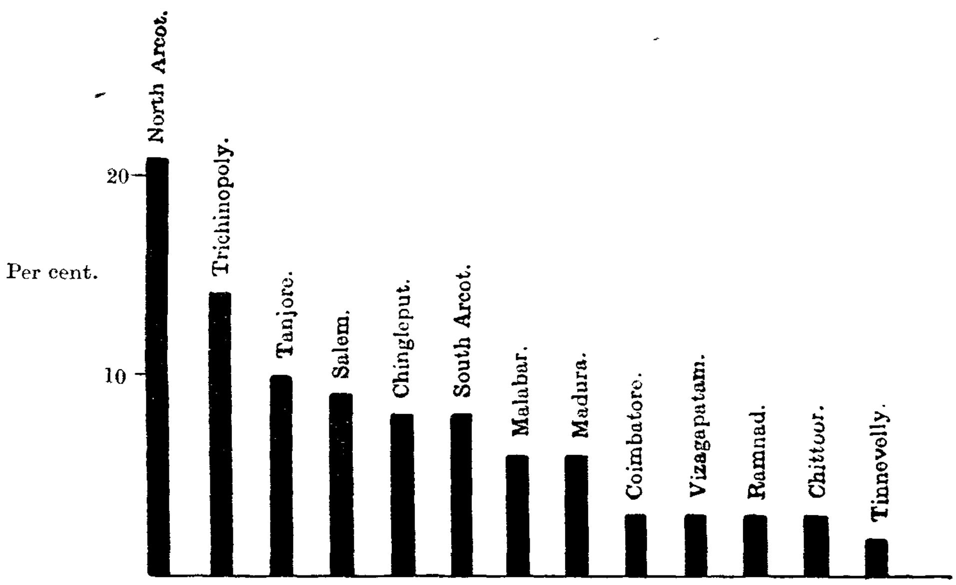
30. Emigration to Malaya is predominantly a hot weather feature, the movement being at its least in October-March and at its greatest in April-June. The main ports are Madras and Negapatam. Before the coming into force of the Emigration Act in 1923, this movement was uncontrolled. Consequently no figures of assisted emigration are available for years before 1923. Figures since that date are given below :—

Emigrants from Madras Presidency to Malaya 1923–30 *with sex details.*

Year.	Males.	Females.	Children.	Total.	Year.	Males.	Females.	Children.	Total.
1923 ..	31,634	4,691	6,734	43,059	1927 ..	93,519	25,318	26,344	145,181
1924 ..	37,308	9,901	9,822	57,031	1928 ..	36,683	8,560	7,356	52,599
1925 ..	59,157	15,012	14,665	88,834	1929 ..	68,847	17,834	14,836	101,517
1926 ..	111,535	30,107	29,282	170,924	1930 ..	38,902	8,789	7,669	55,360

This emigration too is a Tamil phenomenon though not so pronouncedly so as in the case of Ceylon, for Chittoor and Vizagapatam both contribute regularly. Once again, Trichinopoly, Tanjore, Salem and the Arcots make up the bulk of the emigration, Madura and Ramnad assisting. The diagram illustrates the relative contributions. In the last three years, these six districts made up approximately 90 per cent of the assisted emigration from Negapatam. North Arcot sent its main quota through Madras from which port up till 1926 its contribution was over half the total and thereafter never below a third.

Relative District Contributions to Overseas Emigration—**Malaya.**



District.	1923	1924.	1925.	1926.	1927.	1928.	1929.	1930.	Average.
1. North Arcot	34	29	24	24	22	11	12	12	21
2. Trichinopoly	14	10	15	14	11	16	18	15	14
3. Tanjore	10	10	10	9	8	12	15	15	10
4. Salem	6	6	7	11	10	9	10	9	9
5. Chingleput	7	7	8	8	13	5	5	6	8
6. South Arcot	6	7	7	7	6	8	11	12	8
7. Malabar	2	4	6	7	6	11	6	9	6
8. Madura	5	5	9	5	5	10	7	6	6
9. Coimbatore	1	2	4	4	2	6	4	3	3
10. Vizagapatam	5	4	1	1	4	4	2	4	3
11. Ramnad	2	2	3	3	3	4	3	2	3
12. Chittoor	3	3	3	3	4	2	2	2	3

The small table in the margin gives the chief annual percentage contributions to Malayan emigration.

The rise for the districts in or round the Kaveri delta in 1929–30 reflects the cyclone and flood damage in that region in these years. The fall in North Arcot's contribution is marked.

Depressed classes supply over a third of the emigrants, Vellalas, Goundans, Ambalakarans, Kallars and Vanniyas being the next contributors. The chief contributing castes are the same as for Ceylon emigration and the proportions are not dissimilar.

The above figures refer only to persons who passed through the Malaya Government depots at Madras and Negapatam. They do not approximate anywhere to the actual numbers of Madrasis who go to Malaya for agricultural work. These number many thousands each year. Ordinarily such persons go for a shorter time, bent more on trade and casual labour. The ordinary stay of the assisted emigrants in Malaya is at least 3–4 years after which they return for a holiday to India.

The Malaya assisted emigration was greatly affected by the depression in rubber and other plantation industries as a result of which assisted emigration was closed down. The main flow however is closely related to season conditions in India. Such emigrants pay their own fares and the stoppage of the assisted emigration would not affect appreciably their numbers.

Emigration to Fiji.

31. No census of Fiji was taken in 1931 but the Fiji Government in their annual report on Indian affairs made an estimate of the Indian element in their population. The 1921 census showed that 60 per cent of those born

in India came from the United Provinces and 30 per cent from Madras. During the decade, more Madrasis were repatriated and the Madrasi element in the Fiji Indian population must therefore have decreased. The Fiji population of Madras origin (not necessarily Madras-born) is estimated at 20,000. Madrasis are said to have taken more to agriculture than other Indian elements; some of the best and most industrious sugar farmers are Madrasis and at agricultural shows the Madrasi frequently figures in the finals of ploughing and other competitions. Driving of motor transport for hire is largely an Indian monopoly. The report mentions the need of greater protection of the Indian farming community against exactions of moneylenders and their own tendency to improvident borrowing. *Cœlum non animum.*

The caste system of the home-country has been largely abandoned by Fiji Indians. Social relations with other classes are in general freer than at home. Family repatriation is commonest with the Madrasi, who is reported to retain longest his connections with his home-country and ancestral lands.

32. A census of the Seychelles was taken on April 26, 1931. The table in the margin summarizes the principal results so far as it concerns the Indian residents. Three hundred and forty-three of the 503 Indians were born in India and 219 of these within Madras presidency. Some detailed birthplaces are unidentifiable and 219 is probably a minimum. The largest single contributoı is ' Madras ' with 125, but this probably includes a good many returns which had in view the province rather than the town. Tanjore district has the large contribution of 73 ; the French enclave in it, Karaikal, has 11 and the district can probably claim some of the 19 shown as born in 'South India'. Tranquebar is the largest single component with 48 and there apparently exists some bond or association between the Seychelles and this historic little place on the Tanjore coast. Clearly, Madras emigration to the Seychelles is a Tamil phenomenon. Nearly half the Seychelles Indians are to be found in the headquarters town of Victoria and four-fifths are in it or the district surrounding it. This aggregation is explained by the facts of occupation which show as being engaged in trade 211 out of 351 persons employed. The details for these 211 are not without interest. One hundred and two are clerks in shops and the remaining 109 are small shopkeepers of one kind or another. After agriculture, 23 cooks make the next largest component. A wide variety of occupations is returned, among them magicians, policemen, civil servants, clerks in Holy Orders, and hairdressers. Nearly all the Christians are Roman Catholics. Two-thirds of the women are under the age of 20; only one-third of the men are of the same age. The heavy proportion between 20–40 is a normal incident in emigration. The sex ratio is almost unity at ages 0–10 and diminishes thereafter. The large proportion of women below the age of 20 explains the large proportion of unmarried. Seychelles.

	Indians in Seychelles.		
	Persons.	Males.	Females.
Total	**503**	**398**	**105**
Born in Madras.	**219**	..	..
Hindus	**282**	..	..
Christian ..	**144**	..	..
Unmarried	**300**	233	67
Age 20–40 ..	**197**	173	24
Literate	**246**	221	25
Trade	**211**	..	..
Agriculture ..	**67**	..	..

33. One thousand five hundred and forty-one persons enumerated in Mauritius gave their birthplace as Madras presidency. Details are given below :— Mauritius.

	Hindu.		Muhammadan.	
	Male.	Female.	Male.	Female.
	818	450	190	83
Total	1,268		273	
Grand Total	1,541			

The ages of these Madrasi Indians were not tabulated separately from those of other Indians. Occupational details showed 50 per cent of the men and 80 women to be engaged in agriculture ; 150 other men returned commercial and domestic service occupations, the remainder of the men and the women returning no specific occupation.

Cities.

34. The small table below gives for each city the number of persons born within the district per 1,000 of the city population :—

1. Bezwada	595	9. Cocanada	860	17. Tuticorin	932
2. Madras	652	10. Masulipatam	880	18. Salem	933
3. Ellore	672	11. Tanjore	882	19. Mangalore	938
4. Rajahmundry	775	12. Cuddapah	889	20. Tinnevelly	962
5. Trichinopoly	783	13. Vellore	891	21. Calicut	968
6. Madura	816	14. Vizagapatam	892	22. Palamcottah	979
7. Guntur	840	15. Kumbakonam	894		
8. Coimbatore	859	16. Conjeeveram	914		

Only one figure is below 600. The 595 for Bezwada illustrates well the nature of this town which is first and foremost a communication centre. Only two others fall below 750, Madras city and Ellore. The figure for the former is less than that (665) of previous censuses. So marked an increase as 22·8 per cent connoted a strong immigrant contribution whose advent would tend to lower the proportion of homeborn. The presidency town has always drawn many of its inhabitants from Chingleput and also Nellore and the Arcots. Had district birth details been compiled at this census, it is probable that the number of Madras-enumerated born outside the presidency town and Chingleput would not have departed greatly from the 200/1,000 of 1911 or 211 of 1921. The departure would have been plus. Ellore's figure indicates its ' newness ' as a city. Its 672 is, however, too low, for undoubtedly many people in Ellore actually born within the West Godavari district as now constituted returned their district of birth under the name familiar to them from long usage, Kistna.

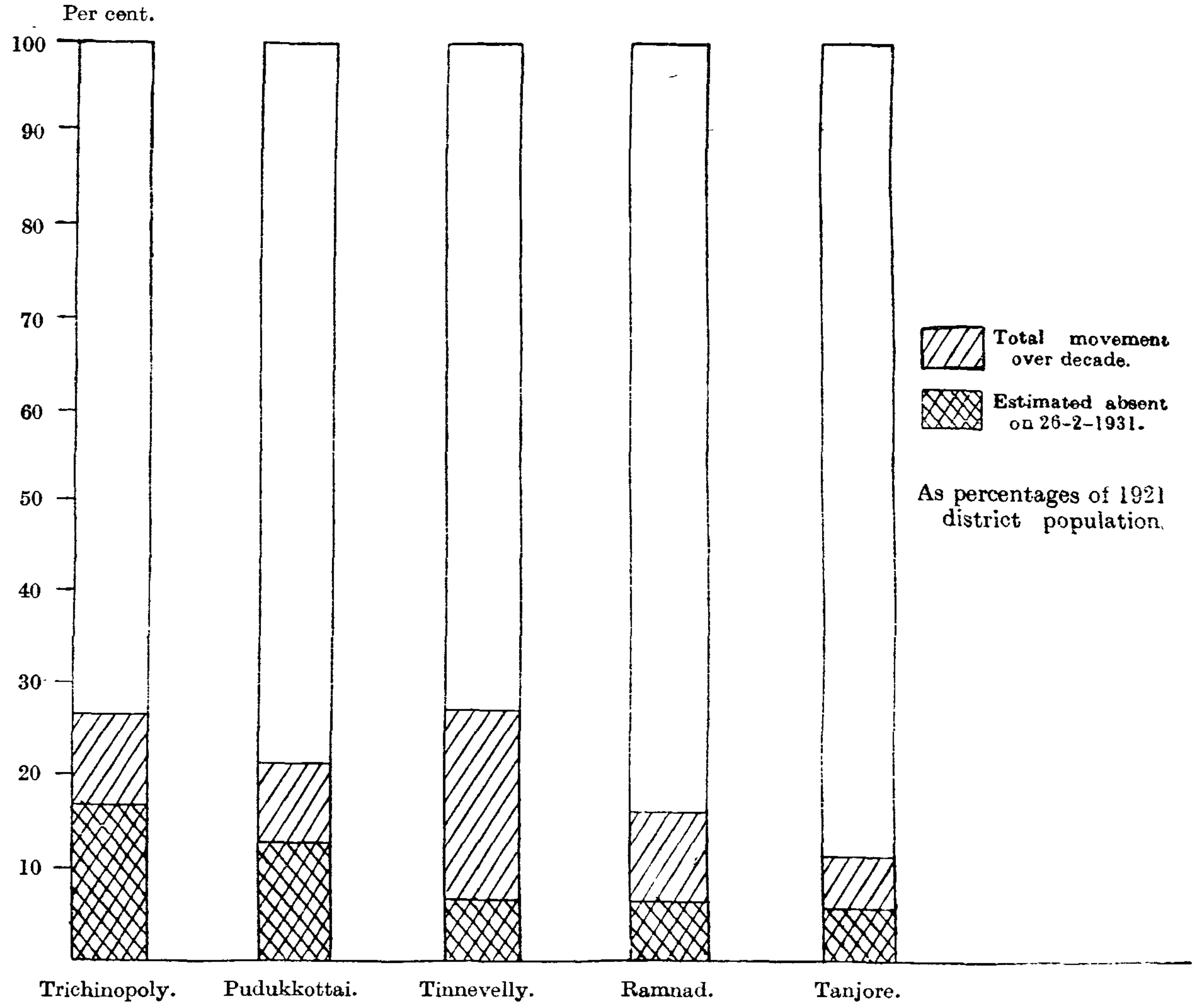
The only other figures calling for comment are Palamcottah, Calicut and Tinnevelly, which return by much the highest proportion of homeborn, and Trichinopoly, Rajahmundry, Guntur and Coimbatore, whose low figures reflect the attractions important areas of communication or developing industry have for a foreign element.

Trichinopoly's low figure of 783 is also to some extent unreal so far as the Pudukkottai element is concerned for this is little distinguishable from that contributed by Trichinopoly district which encloses the state on the west. Coimbatore receives contributions from Cochin and Mysore, both of which States the district adjoins, and Mangalore from Bombay, Mysore and Goa. Bezwada has an appreciable Hyderabad contingent, over 5 per cent of its population and 6·8 per cent of its females having been born there. The State contributes appreciably also to other Circars cities, Masulipatam, Guntur and Ellore. The element ' elsewhere in British India ' in Vizagapatam is mostly Bengali.

Ordinarily the homeborn element is less among males than among females. Only in Ellore does this not obtain, and there the difference may, I think, be attributed to the circumstance already mentioned, viz., a certain confusion with regard to district names. On this theory the discrepancy between the two rates should be greatest in those cities where industry is in its most rapid development, for there immigrant labour may be expected to be greatest. The widest difference is in Vizagapatam where for 866 homeborn male there are 920 homeborn female. Vizagapatam as a railway and harbour centre with large works in operation, is obviously one where male immigrants would be in excess. Mangalore gives figures of 917/960, Madras 630/677 and Coimbatore 839/881. All these are centres of trade or industry where male immigration might be expected to be marked.

35. Daily emigration in the form of journeys to and from a town is on the increase. The South Indian Railway have recently electrified their track from Madras to Tambaram (18 miles) and a much accelerated service is in operation. It is too early to predict the effects of this but a considerable increase of settlement in St. Thomas' Mount and other suburban areas is one likely result. The pronounced growth in population of these southern suburbs has already been noted. The season ticket issues on this railway show an increase of 64 per cent over 1921.

Dimensions of Migration from five South Indian areas.



Estimated emigration drain.

36. The diagram is an attempt to illustrate the effective drain represented by emigration from the chief contributing districts in South India. No birthplace census details are available anywhere but the records of the Emigration Commissioners for Ceylon and Malaya give a good approximation of the general rate of contribution of Madras districts. These proportions have been applied to figures of Indians in Ceylon and Malaya and totals thereby arrived at. These are only approximations but the general dimensions are representative. Actual figures of persons from these districts found in estates in South India have been added. No figures exist to indicate relative district contribution to Burma emigration during the decade; this contribution has therefore been allotted on the 1921 proportions; as this emigration has always been predominantly a Northern Circars feature, its effect on the figures in question is not very great.

District or State.	Putative contribution in 1931 to Indians in			Upasi (four-fifths 1930 actual.)	Total (to nearest 0).	Percentage of total to 1921 population.
	Ceylon.	Malaya.	Burma.			
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Tanjore	84,667	60,651	24,994	95	170,400	7
Trichinopoly	266,704	81,859	..	4,890	353,450	19
Pudukkottai	53,769	1,806	..	70	56,650	13
Ramnad	72,163	17,828	22,911	6,747	119,650	7
Tinnevelly	79,435	10,895	7,736	33,087	130,880	7

In the result the figures show that the number of persons born or associated with Trichinopoly who at census time were definitely removed from their district was 19 per cent of the 1921 district population. For the adjoining Pudukkottai State the figure is 13 per cent. This district and State together constitute the heart of the area which for 1921–31 either showed a decrease or almost infinitesimal increase in population and the relation of prime cause and effect is admirably illustrated by the diagram and the table. If estate labour on the United Planters' Association of Southern India's areas is omitted, the Trichinopoly figure is only slightly decreased, that for Ramnad more so, while that for Pudukkottai is unchanged. The Tinnevelly figure becomes 5.

37. The small table in the margin compares population percentage variation from 1921 according to the census figures, with putative variation when effects of emigration abroad are considered. The percentages as altered in the process of adjustment are much nearer to the 12 per cent adjusted presidency increase for the decade than the figures in column 2 to the unadjusted 10.

District or State.	Percentage variation 1921–31. Census figures.	Adjusted figures.
Province	**10·3**	**12**
Tanjore	2·4	9
Trichinopoly	0·5	19
Pudukkottai	— 6·1	7
Ramnad	7·0	12
Tinnevelly	7·3	14 (12 omitting Upasi figures)

38. The total movement abroad is given in the small table. This is only an approximation and makes no allowance for returns. The object is to indicate the extent to which emigration has become a habit. These figures are indicated also in the diagram. It will be observed that the difference in the single and double shaded parts is greater relatively in Tinnevelly and Ramnad than in the other districts and is least in Pudukkottai. This illustrates how much more emigration from these two districts is a casual and short-term feature and how Pudukkottai and Trichinopoly contribute proportionately more to effective emigration for a period of years.

District or State.	Approximate total movement abroad.	Percentage of 1921 population.
Tanjore	263,500	11
Trichinopoly	505,500	27
Pudukkottai	88,300	21
Ramnad	276,200	16
Tinnevelly	517,500	27

39. Figures of repatriates from South Africa from 1923 are given in the margin. For 1921 and 1922 only gross figures of repatriates from all areas outside Ceylon, Burma and the Straits are available. These were 13,865 and 19,621 respectively. 1927 was the year in which most returns from South Africa took place, 1923 being a close second. In 1928 there were no returns. The distribution of women and children in each year's quota shows the largely family nature of this movement, The emigrants generally brought back with them an average of £15 per adult male. Recent statistics show that about a third of the repatriates made for North Arcot; Chingleput was next favoured contributing about a fifth, and South Arcot came third. From this we may deduce that the Arcots have been the strongest contributors to Madras emigration to South Africa. South African repatriates have settled down in various ways. Some have been heard to complain that they find pay rates in India inadequate to the standard of living they had been accustomed to in South Africa.

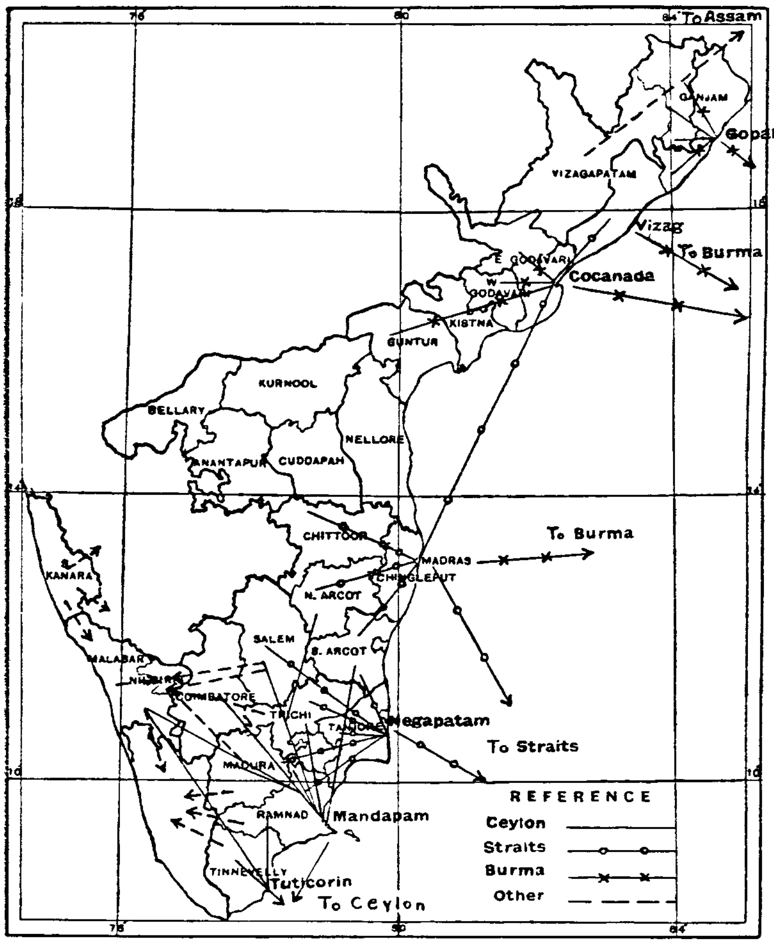
Year.	Persons.	Men.	Women.	Children.
1923	2,037	1,022	447	568
1924	1,082	543	240	299
1925	935	476	199	260
1926	1,454	669	319	466
1927	2,387	1,162	508	717
1928	..	..	..	..
1929	1,442	609	305	528
1930	690	330	143	217
Total ..	**10,027**	**4,811**	**2,161**	**3,055**

Importance of emigration.

40. The matter in the tables and the discussion above show that Madrasis found abroad at census time were more numerous in 1931 than in 1921, the

increase being in close proximity to that of the growth in actual population.

Emigration.



The map indicates the main contributing areas. It is an attempt at pictorial representation of emigration currents within and from the province. It does not profess to be complete. Smaller movements such as that from the Ceded Districts to Assam have not been shown as the result would merely have been to confuse the map by over many lines. The Vizagapatam contribution to Malaya has been shown through Madras to indicate that it operates mainly through that port. The map should be taken as indicating the main movements with the understanding that on the fringes of these, subsidiary movements exist. A notable feature is the disproportionate emigration from a region which may be described roughly as the lower Kaveri valley and is indicated more precisely by the unshaded area in the map in Chapter I showing regional variation in population. Trichinopoly district contributes to every main flow of emigration, Ceylon, Malaya, Burma, and the plantations in the west. Its surrounding districts, Madura, Ramnad and South Salem follow its lead. Indications are clear that this area is saturated and but for the relief afforded by emigration, overpopulation would become an immediate and present problem. Ceylon and Malaya we may say act as safety valves to Southern India. The same applies although in a less degree to the Northern Circars and Burma, and the Arcots and Malaya. It is probable that a continuing proportion of emigration is due to a desire to escape from restrictions suffered in the homeland by the depressed classes who form the great bulk of Madras emigrants. Emigration is a great teacher of self-respect, for caste is to a large extent put away when the Indian emigrant crosses the sea. To this extent and to the existence of an undoubted emigration tradition, the drain to Ceylon, Malaya and Burma need not be considered an indication of saturation; there remains however a sufficient residue, particularly in the Kaveri area referred to, to justify a conclusion that saturation exists. One social effect of emigration has been indicated above, viz., a growth in independence and self-respect on the part of the depressed classes who go abroad. This is all to the good. A man who, little removed from praedial serfdom in Tanjore, finds himself treated on his own merits like every one else when he crosses the sea, paid in cash for his labours and left to his own resources, must in the majority of cases benefit from the change, and it is probably the existence of the emigration current that has contributed most to the growth of consciousness among the depressed classes in India and in the interests of those classes one might well say, not less emigration but more, for the true remedy for the condition in which they find themselves is not to be looked for in Government enactments or pious utterances but

in a growth of self-reliance among the communities themselves. Labourers from well-run estates generally bring back to their village some of the ideas on cleanliness, food and comfort acquired while abroad. Evidences of this are to be seen in many a South Indian village and I have myself on several occasions had pointed out to me a house differing markedly from its neighbours as being that of some one who had been to Malaya or Ceylon.

Effect on fertility.

41. It is difficult in the absence of exact statistics to make any comment on the possible effects of migration on fertility. Where the period is of short term and largely by families, the effect is nil or in fact definitely beneficial, for on all estates before-birth assistance and care are the general rule and medical facilities are provided far above anything obtainable in the ordinary Indian village. Where emigration is predominantly male and for periods extending to two or three years, an obvious effect on fertility might be expected which is borne out by the birthrate in the southern Tamil districts which contribute most heavily to Ceylon and Malaya emigration, running generally below that for the rest of the presidency.

Effect on religion, occupation, etc.

42. Emigration has no observable effect on religion. The Madrasi abroad has sufficient of his own kind around him to be able to continue unaltered in a new country such religious practices as he favours at home. It could hardly even be said that an increased tolerance resulted from his excursions and so far as Muslim emigrants are concerned any influence would probably be in the other direction, for the Madras Muslim is more catholic than others in his sympathies and observances. Caste rigidity undoubtedly weakens but so largely homogeneous are the contributions that here too the effect is less than might be expected. Also no Madrasi emigrant even so far afield as Fiji severs his ties of community with the home-country and on his return seeks to take a normal place within it. Such circumstances would tend against any rapid loosening or alteration of caste ideas. The effects of emigration upon education are good so far as estate labour is concerned. The great majority of well-conducted estates run schools which the children of workers are encouraged to attend. The Ceylon figures quoted show that the proportion of attendance at estate schools is considerable. Effects on occupation are less than might be expected. The great mass of Madrasi emigrants go forth to carry out in their new countries the agricultural occupations they inherited at home. The contribution to domestic service is by classes contributing to it in India. The traders are those who in India would probably also have traded. Of the Madrasi emigrant the same might be said as of the British: he takes his own world with him and sets it down in his new surroundings.

i.—Immigration (000 omitted).

Natural division and district where enumerated.	Born in: District or State.			Other parts of the Province.			Contiguous Province or State.			Other parts of India.			Beyond India.		
	P.	M.	F.	P.	M.	F.	P.	M.	F.	P.	M.	F.	P.	M.	F.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Province ..	***46,927***	***23,162***	***23,765***	..	..	..	***224***	***111***	***113***	***23***	***16***	***7***	***20***	***12***	***8***
Agency	***1,734***	***865***	***869***	***15***	***7***	***8***	***14***	***6***	***8***	***1***	***1***	..	..	..	..
Ganjam	356	176	180	..	..	..	2	..	2	..	..	..	..	..	..
Vizagapatam ..	1,154	576	578	6	3	3	5	3	2	..	..	..	..	..	..
Godavari, East ..	224	113	111	9	4	5	7	3	4	..	..	..	..	..	..
East Coast, North ..	***11,825***	***5,799***	***6,026***	***309***	***153***	***156***	***36***	***16***	***20***	***5***	***4***	***1***	***1***	***1***	..
Ganjam	2,040	934	1,106	9	5	4	3	1	2	1	1	..	..	..	..
Vizagapatam ..	2,423	1,181	1,242	17	8	9	1	1	..	1	1	..	..	..	..
Godavari, East ..	1,625	801	824	53	26	27	1	1	..	1	1	..	..	..	..
Godavari, West ..	1,129	556	573	90	44	46	3	2	1	..	..	..	..	..	..
Kistna	1,161	590	571	69	35	34	24	10	14	1	1	..	..	..	..
Guntur	1,989	1,004	985	42	22	20	4	2	2	1	1	..	..	..	..
Nellore	1,457	731	726	28	12	16	1	1	..	..	..	..	..	..	..
Deccan	***3,871***	***1,980***	***1,891***	***119***	***57***	***62***	***56***	***26***	***30***	***2***	***1***	***1***	..	..	..
Cuddapah ..	927	474	453	22	10	12	1	..	1	..	..	..	..	..	..
Kurnool	981	499	482	37	18	19	6	3	3	..	..	..	..	..	..
Banganapalle ..	35	18	17	4	2	2	..	..	..	..	..	..	..	..	..
Bellary	919	467	452	24	12	12	26	13	13	1	1	..	..	..	..
Sandur	9	5	4	4	2	2	1	1	..	..	..	..	..	..	..
Anantapur ..	999	516	483	29	14	15	22	9	13	..	..	..	..	..	..
East Coast, Central ..	***12,693***	***6,375***	***6,318***	***577***	***286***	***291***	***61***	***30***	***31***	***9***	***6***	***3***	***9***	***5***	***4***
Madras	422	215	207	197	109	88	19	11	8	6	4	2	4	3	1
Chingleput ..	1,564	792	772	83	40	43	5	3	2	2	1	1	2	1	1
Chittoor	1,399	718	681	41	18	23	8	3	5	..	..	..	..	..	..
North Arcot ..	2,190	1,098	1,092	72	31	41	3	2	1	..	..	..	1	1	..
Salem	2,361	1,178	1,183	63	30	33	9	3	6	..	..	..	1	..	1
Coimbatore ..	2,374	1,179	1,195	58	32	26	12	6	6	1	1	..	1	1	..
South Arcot ..	2,384	1,195	1,189	63	27	36	6	3	3	1	1	..	1	1	..
East Coast, South ..	***10,371***	***5,018***	***5,353***	***376***	***174***	***202***	***18***	***10***	***8***	***3***	***2***	***1***	***7***	***4***	***3***
Tanjore	2,304	1,105	1,199	74	35	39	5	2	3	1	1	..	2	1	1
Trichinopoly ..	1,794	881	913	113	50	63	4	2	2	1	1	..	2	1	1
Pudukkottai ..	364	177	187	35	13	22	..	..	..	..	..	..	1	1	..
Madura	2,113	1,041	1,072	79	38	41	2	1	1	..	..	..	1	1	..
Ramnad	1,779	842	937	57	28	29	2	1	1	..	..	..	..	..	..
Tinnevelly ..	2,017	972	1,045	17	9	8	5	3	2	..	..	..	1	1	..
West Coast	***4,963***	***2,404***	***2,559***	***74***	***44***	***30***	***39***	***23***	***16***	***3***	***2***	***1***	***3***	***2***	***1***
Nilgiris	97	49	48	52	31	21	17	10	7	2	1	1	2	1	1
Malabar	3,499	1,696	1,803	16	9	7	17	9	8	1	1	..	1	1	..
Anjengo	6	3	3	..	..	..	1	..	1	..	..	..	..	..	..
South Kanara ..	1,361	656	705	6	4	2	4	3	1	1	1	..	..	..	..

ii.—Emigration (000 omitted).

Province of birth.	Enumerated in: Province.			Contiguous Provinces and States.			Non-contiguous Provinces and States.			Outside India.			Natural population.*		
	P.	M.	F.	P.	M.	F.	P.	M.	F.	P.	M.	F.	P.	M.	F.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Madras	**46,927**	23,162	23,765	**725**	423	302	**408**	303	105	**1,032**	657	375	**49,092**	24,545	24,547

Separate figures for British Territory and Madras States are not available.

	Persons.	Males.	Females.
* Actual figures are :—	**49,092,350**	24,545,060	24,547,290.

iii.—Migration between the Province and other parts of India.

a.—British Territory and States.

Province.	Immigration.			Emigration.			Immigration *minus* emigration.	
	1931.	1921.	Variation.	1931.	1921.	Variation.	1931.	1921.
1	2	3	4	5	6	7	8	9
Total ..	***230,330***	***182,312***	***+ 48,018***	***1,133,323***	***917,468***	***+ 215,855***	***— 902,993***	***— 735,156***
British Territory ..	***47,584***	***54,635***	***— 7,051***	***529,127***	***459,729***	***+ 69,398***	***— 481,543***	***— 405,094***
Contiguous provinces	32,143	45,663	— 13,520	122,994	92,283	+ 30,711	— 90.851	— 46,620
Burma	3,181	1,915	+ 1,266	297,633	273,000	+ 24,633	— 294,452	— 271,085
Elsewhere in British India	12.260	7,057	+ 5,203	108,500	94.446	+ 14,054	— 96,240	— 87,389
States and Agencies.	***182,746***	***127,677***	***+ 55,069***	***604,196***	***457,739***	***+ 146,457***	***— 421,450***	***— 330,062***
Madras States.								
Travancore ..	16.756	8.293	+ 8.463	104.342	58.277	+ 46,065	— 87,586	— 49,984
Cochin	14.820	10,124	+ 4.696	54,614	26.388	+ 28.226	— 39,794	— 16,264
Hyderabad ..	58,476	38.916	+ 19,560	132,952	84,158	+ 48,794	— 74,476	— 45,242
Mysore	86.485	66,855	+ 19.630	294.117	269.675	+ 24,442	— 207,632	— 202,820
Other Indian States.	6,209	3.489	+ 2,720	18,171	19,241	— 1,070	— 11,962	— 15,752
India unspecified ..	550	..	..	..	..	..	..	..
Foreign Territories.	16,012	..	..	..	..	..	..	..

Note.—In this subsidiary table, Travancore and Cochin States are treated as outside the Madras presidency.

No information of the numbers of Madras-born enumerated in French and Portuguese India have been received. This element is therefore not included in the totals.

b.—British Territory.

Province.	Immigration.			Emigration.			Immigration *minus* emigration.	
	1931.	1921.	Variation.	1931.	1921.	Variation.	1931.	1921.
1	2	3	4	5	6	7	8	9
Total ..	***249,483***	***195,363***	***+ 54,120***	***1,176,411***	***958,367***	***+ 218,044***	***— 926,928***	***— 763,004***
British Territory ..	***47,277***	***54,402***	***— 7,125***	***529,036***	***459,652***	***+ 69,384***	***— 481,759***	***— 405,250***
Contiguous provinces	31.920	45,464	— 13.544	122,993	92,271	+ 30,722	— 91,073	— 46,807
Burma	3.158	1,895	+ 1.263	297,543	272.946	+ 24,597	— 294,385	— 271,051
Elsewhere in British India ..	12.199	7,043	+ 5.156	108.500	94,435	+ 14,065	— 96,301	— 87,392
States and Agencies.	***202,206***	***140,961***	***+ 61,245***	***647,375***	***498,715***	***+ 148,660***	***— 445,169***	***— 357,754***
Madras States.								
Travancore ..	16.604	8,219	+ 8.385	104,277	58,080	+ 46,197	— 87,673	— 49,861
Cochin	14.743	10.103	+ 4,640	54.614	26.380	+ 28,234	— 39.871	— 16,277
Other Madras States.	20,389	13,839	+ 6,550	43.338	41,211	+ 2,127	— 22,949	— 27,372
Hyderabad ..	58.108	38,737	+ 19.371	132,952	84,152	+ 48,800	— 74,844	— 45,415
Mysore	86.203	66.577	+ 19.626	294,024	269,651	+ 24,373	— 207,821	— 203,074
Other Indian States.	6,159	3,486	+ 2,673	18,170	19,241	— 1,071	— 12,011	— 15,755

Note.— This part refers to migration between Madras, (British Territory) and other parts of India including the Madras States of Pudukkottai, Banganapalle and Sandur.

c. Madras States.

Province.	Immigration.			Emigration.			Immigration *minus* emigration.	
	1931.	1921.	Variation.	1931.	1921.	Variation.	1931.	1921.
1	2	3	4	5	6	7	8	9
Total ..	***44,574***	***41,999***	***+ 2,575***	***20,639***	***14,151***	***+ 6,488***	***+ 23,935***	***+ 27,848***
British Territory ..	***43,645***	***41,444***	***+ 2,201***	***20,480***	***13,916***	***+ 6,564***	***+ 23,165***	***+ 27,528***
Madras ..	43.338	41,211	+ 2,127	20,389	13,839	+ 6,550	+ 22,949	+ 27,372
Contiguous Provinces ..	223	199	+ 24	1	12	— 11	+ 222	+ 187
Burma	23	20	+ 3	90	54	+ 36	— 67	— 34
Elsewhere in British India.	61	14	+ 47	..	11	— 11	+ 61	+ 3
States and Agencies	***929***	***555***	***+ 374***	***159***	***235***	***— 76***	***+ 770***	***+ 320***
Madras States.								
Travancore ..	152	74	+ 78	65	197	— 132	+ 87	— 123
Cochin	77	21	+ 56	..	8	— 8	+ 77	+ 13
Hyderabad ..	368	179	+ 189	..	6	— 6	+ 368	+ 173
Mysore	282	278	+ 4	93	24	+ 69	+ 189	+ 254
Other Indian States. ..	50	3	+ 47	1	..	+ 1	+ 49	+ 3

Note.—This part refers to migration between the Madras States of Pudukkottai, Banganapalle and Sandur, and other parts of India, including Madras. British Territory.

CHAPTER IV.

AGE.

THE Imperial table with which this chapter is concerned is VII which shows age distribution by sex in combination with details of civil condition. The religion summary which opens the table gives yearly figures up to 5 and 5-year groups thereafter till 70 and over. The district, state and city figures give only 10-year grouping after age 20.

The subsidiary tables at the end of the chapter give a wide variety of information by age-group for religion, community, natural division, and intercensal variation. *v* and *v-a* show, for religion and natural division and five censuses, the proportions of juvenile and aged to the middle-aged and of married women of productive years. *vii–viii* show birth and death rates for intercensal years by natural division and *ix* shows deathrate by age group and sex for these years. In these three tables an important and overdue departure has been made. They are based on the annual reports of the Director of Public Health, Madras, which take their rates for every intercensal year from the figures of the census which began the decade. The mathematical fallacy is obvious and successive Directors of Public Health have resented the compulsion to follow so unsound and unnecessary a practice. There was no reason why the census should stultify itself also and Subsidiary Tables *vii–ix* have therefore been prepared from intercensal population figures calculated by a geometrical progression on the 1921 and 1931 actuals. For purposes of comparison the same tables prepared on the old system are given, each above its new parallel. Subsidiary Table *x* gives deaths from certain diseases by year, sex and natural division.

Religion not an absolute social criterion.

2. The modifications referred to in paragraphs 3 and 4 of the flyleaf introduction to the table have their origin in the fact that determination of age conditions by communities is essentially a function of social differences rather than of technical religious labels. A person of pure Hindu origin who elects to describe his religion as Theosophy falls nevertheless naturally into the Hindu group for consideration of age questions. So for a freethinker, otherwise pure Muslim by extraction and social customs, or for sundry Europeans whose personal attitude towards unseen things varied considerably but who for consideration of any essentially social problem were indistinguishable from their like who professed Christianity. The use of religious labels for social purposes is unsound, though obviously convenient in present Indian conditions and, having regard to the fewness of proclaimed exceptions, sufficiently accurate. It may be however that while the social aspect remains strong the religious returns may vary, and more will follow the example of those who at this census distinguished between Hinduism and Islam as personal religious attitudes and as general social communities or 'sub-nationalities' as one of my correspondents put it.

Similar considerations apply and are much more strongly present in the cases cited in the fourth paragraph of the flyleaf. The ascription of 'Hindu' as religious belief to these tribes is of most doubtful reliability in very many cases; were it taken as a social label it would be misleading in practically all, for Hinduism has yet appreciably to modify tribal habits in any matter affecting the main events and functions of life. The actual returns of 'Tribal' as a religion in Vizagapatam Agency were 137,042; the tribes however number over 620,000. Clearly if community illustration is sought, the tribal number is the true unit, not the factitious religious grouping.

3. An allied point is that the presence in these age tables of Europeans is unscientific. Their numbers (12,377) are so small as to make the effect of their presence and their widely differing age and marital conditions not appreciable; nevertheless I would suggest that they be excised from the corresponding tables at future censuses and at any rate from the Christian sub-grouping. The drawbacks of using religious distinctions for social purposes

are again illustrated here and instead of religion community should be the specific criterion for sub-groupings in this and other tables. It would mean more involved sorting but should, I think, be done.

Enumeration changes.

4. Instructions to enumerators were that age should be asked and recorded to the nearest birthday. Previous practice had been to record the age last birthday, and the change was made at the request of the Government of India's actuary. Great pains were taken to impress on the enumeration staff the nature of the enquiry they were to make and I devised conundrums to test their appreciation of the issue, a method of instruction capable, incidentally, of arousing considerable interest and even amusement and therefore used wherever possible throughout the operations. One was to ask how they would record the age of a person whose birthday was the 26th August, i.e., exactly six months from the census date. Which was his nearer birthday? An excellent reply from a conscientious Tamil supervisor was that the time of birth should be asked; if it was any time before sunset the nearer birthday and therefore the age to be recorded was clearly in the August to come. Such extreme thoroughness was indeed refreshing but could not be said to characterize the normal approach of an unpaid staff doing spare-time work to novelties or refinements in a duty towards which their general attitude was rather resignation than enthusiasm.

When one reflects on conditions in India it is difficult to place any serious value on the change and I could detect among supervisors a not infrequent wonder that it should be thought worth while to particularize on the day of birth at all when in the vast majority of cases the month is unknown and in most cases the year, while the lustrum and even the decade must frequently be a guess. Much justification could be pleaded for such an attitude but I found nevertheless a ready acceptance of my contention that if a particular form of instruction is in itself preferable it should be adopted and imparted even if its actual influence may not be great. And in general, with that tolerance for the vagaries of superiors which is so attractive a feature of Indian life, the Madras enumeration staff, while they might not reach the heights of the devoted supervisor already mentioned, sought always the nearest instead of the last birthday.

A peculiar difficulty arose from the fact that in parts of Malabar the equivalent Malayalam in common use for both 'nearest' and 'next' was the same. This was met by special instructions but illustrates well the difficulties of a polyglot census.

Among the educated the change had effect; elsewhere much depended on the perseverance and local knowledge of the enumerator. Over most of the field the effect can only have been infinitesimal.

5. Another innovation which caused some incredulity and amusement was the instruction that for children below six months the age entry should be 0. Some enumerators seemed positively to dislike this, regarding a zero age entry perhaps as an injustice to a helpless child, certainly as a flat contradiction in terms. Most came to see the logic of the entry when the unit was a year and fractions were forbidden but not infrequent entries of 'sisu' (= infant) betrayed probably the enumerator's distrust of so peculiar an entry as 0 for age.

A Salem incident illustrates another attitude towards the enumeration of infants. A father, challenged about the absence from his account of persons present of any indication of a very recent arrival, said with some surprise: 'It is but now born! Do you count it?'.

The fruits of perseverance.

6. Perseverance brings us to the keynote of good enumeration of age in India. 'Patience and a mulberry leaf will make a silk gown', says the Chinese proverb, and certainly patience in an enumerator is the most precious of virtues and can be rewarded with remarkable results. Thus a woman in Nellore who responded to the opening direct question on age by a rather melancholy 'How should a woman tell?' revealed on patient and skilful questioning a series of recollections that pinned her age down to a definite year while a great triumph was with a Circars scoffer whose first answer about his age

was 'God knows'. It was put to this man that it was a point of honour to determine his date of birth and he himself joined enthusiastically in the hunt. The village officers and half the village took part also. It was from the man himself that the clue came. After much thought he came out with the information that his mother had always told him he was born in a cyclone which had caused great destruction of trees in that neighbourhood. A chorus of voices corroborated that such a storm had indeed visited these parts about fifty years before. The year was finally settled with the help of the tahsildar, 1884. Was it cold weather, hot weather or rains ? I asked. 'Cold weather' was the unanimous reply of the veterans. 'Then this man's census age is 46', I said and we all leant back exhausted but gratified, the owner of the 46 years looking most pleased of all; as indeed he might, for he now possessed what he had lacked before, an ascertained age.

7. The degree of uncertainty about age is not uniform. The age unit for infants the world over is the month and there can be few parents or at least mothers anywhere who could not date with some accuracy the birth of a child two years old or less. For ages beyond this accuracy diminishes but up to five the year can be approximated to with some confidence and in the tables now under discussion the age group 0–5 is probably the most accurate of all. The fact that enumerators were wherever possible men of local knowledge aided the search and in rural tracts these know-alls, the village officers, were a constant resource. In the villages, the age of permanent inhabitants can be much more readily tested than that of immigrants or strangers, in whose case the local recollections of village officers and residents are of no avail. In towns the local knowledge of village officers is no longer present. In the hamlets where the depressed classes are uncomfortably huddled, age knowledge is nil and the village officers can contribute nothing and it is in the paracheris in towns that ignorance of age is most abysmal. Truly the enumerator had a hard task. With those whom he sees he has at least the exercise of personal opinion as a last resort but for those he does not see he has to take at second-hand from one whose conception of years is often fantastic and to whom fifty and seventy are much the same and sixty and seventy probably identical. In the villages local criticism is available, in the towns strangers are more frequent and there is much less common stock of knowledge ; thus, contrary to what might be expected, age determination, certainly of women, is probably better in villages than for corresponding classes in towns. Combinations of events give occasional guidance and the concurrence of say birth, puberty, or marriage, with some public calamity or occasion such as a famine, cyclone, the advent of a railway or (as was employed on one occasion) of a man-eating panther, yield frequent glimmers to light us. Essentially, however, the age quest at an Indian census remains a groping in the dark. **Value of the returns.**

8. It is clear therefore that Indian census ages are hardly examples of scientific and ultimate determination. The great numbers involved, however, the observation of tendency and the facts of probability make it possible to draw a greater value from the returns than might be expected, and in the report of the Government of India's actuary will be found much interesting and highly developed treatment of apparently unpromising material. Among the general tendencies observed is that to favour the end of each decade of age and then its centre, a vivid illustration of how fundamentally human counting starts from the possession of two hands with five fingers on each. After this come the even digits in order of proximity to a 0 termination, then the odd in order of proximity to 5, the full preferential order being 0, 5, 2, 8, 6, 4, 3, 7, 1, 9.

Another observed tendency where age is an approximation, is towards overstatement. This too may reflect a natural influence at work, for it is deep in every human consciousness that in life dy/dx is always positive, that while we think we grow older. Hence where precision is absent, the tendency must be to go above rather than below and this has influence in determining the order of digit popularity given above.

9. Ages of women are in India as in England less reliable but for different reasons. The Indian view of life is more functional than annual. Where a woman is married and a mother she is apt to be given a greater tale of years **Tendencies affecting the returns.**

than is her due ; she is held to have reached years and completeness and whether she is twenty or thirty is a minor matter. The same attitude appears in a tendency to return the age of unmarried girls below the true figure. Such girls have not yet assumed the functions of maturity and therefore are unconsciously regarded as younger than their true age. A deliberate lowering of age probably enters also here in castes which practise child marriage and in general from the attitude that there is something not proper about the combination of adult years and spinsterdom. The Sarda Act probably caused a drop of a year or two in the recorded ages of many girls approaching their teens. The functional outlook is evident in the ascription to elderly bachelors of some incorrigible juvenility, an attitude reflected in a tendency to give them fewer years than their due. Most of all, however does it emerge in the case of the old. Old age is a category obscuring all years. A man past his prime or a woman past child-bearing has crossed a frontier and in India the fact of the crossing is of much greater importance than the length of the step beyond. Some age is taken as representing the category ' old ' and tends to be applied indiscriminately to all within it. Hence a general tendency to exaggerate ages for old people. Widows in particular suffer from this.

From one point of view this illustrates the peculiarly practical and realist outlook on life of the average Indian, who yet is often thought to be impractical and visionary. After all, years are a mere convenience for reckoning ; to exalt them into an absolute standard as is done in western countries, is to give them an undue importance. Capacity is what matters. Thus to the Indian our application of age-limits to govern retirement and general insistence on birth certificates seem probably to show a defective and—to use a popular word in India—bureaucratic attitude towards life.

Vital statistics.

10. In any treatment of age questions vital statistics are of great importance and it is one of the abiding handicaps of such treatment in India that these statistics while more reliable than they were are still far from what they should be. In Chapter I some indication has been given of the vagaries with which the Public Health Department has to contend. Omissions are the most striking instance of weakness in the record ; there are others, however, e.g., the circumstance that the date, at least in the case of births, is nearly always an approximation and may be distant by weeks or months from the actual event. In such original data the possible error is large and this reappears inevitably in ratios based on them. Great care is necessary in using such ratios and probably much of the ill-favour in which statistics are held in uninformed quarters is due to unintelligent preparation and use. To some minds the presence of a decimal point with a string of figures after it conveys an impression of profound exactitude ; actually the decimal and its sequent digits, in fact even the units or tens figures, may be examples of spurious and misleading detail. No sane person would step on a bridge that seemed not up to his weight ; many will avoid deduction beyond the range of their premiss ; yet a vast number will extract to several places of decimals figures valueless beyond the units, tens or even a higher stage and deduce and prophesy therefrom. If this illusory detail merely remained on exhibition to serve as an instance of time ill-spent or at the most were taken as illustrative material only, no great harm would be done ; what happens unfortunately too often is that criticism is made or decisions taken on differences valueless as a ground for positive conclusion. Thus Subsidiary Table *vii*, even in the new form based on calculated intercensal populations shows the birthrate 9 per 1,000 greater in 1930 than in 1921. Yet to conclude from this that the Madras birthrate is rising would be grotesque ; all that is happening is that the vital statistics are improving. The unimproved form of this subsidiary table shows an apparent rise in birthrate of 12 per 1,000. In its case defects in the original data are aggravated by false mathematics. Infantile mortality is calculated on deaths per 1,000 births. The number of births is anything but an exact determination of actual facts as has been indicated ; deaths are less inaccurate but are far from absolute. The ratio resulting from a division of these approximations must have a wide zone of uncertainty, for if x and y are the possible

errors in a and b the quotient may range between $\frac{a+x}{b-y}$ and $\frac{a-x}{b+y}$. The taking of ratios to the 1,000 recognises the impossibility of using the crude figures but transfer of the decimal point merely shifts the error zone to the right. The decimals in such ratios are of practically no value. By custom they are retained but it seems to me that vital statistics—and derived census figures—would do well to excise them altogether.

In Public Health Reports constant reference is made to the deficiencies of the returns and the mode of collection and control. The indignant District Health Officer of a Deccan district made rather heated reference to 'the incompetence and indifference of these ultimate radicals of registration work'—meaning the village officers—and similar complaints, less allusive and polysyllabic, but not less sincere could be paralleled from every district in the presidency. Chapter I has cited the fact that health officers in 1930 detected 60,000 unregistered births. This is over 3·8 per cent of the actually registered births and represents not the finally ascertained error but merely an empirical determination. The error is of formidable dimensions as it is and shows clearly the need for caution in using as absolute records ratios based on data so fluid.

It follows from these remarks that no absolute value can attach to any figure stating or derived from Madras vital statistics. Against 1928 in Subsidiary Table *vii* appears 39·5 as the Deccan birthrate. Subsidiary Table *viii* shows an Agency deathrate of 24·1 for 1921, and *ix* shows for example a deathrate for age 0–1 of 243·8 for 1927. As absolute statements of facts existing for these circumstances they have no value. Even as approximations, their closeness is open to question. Standing alone they would hardly even have value as indicating dimensions. When however they accord in general magnitude with a long series of similar determinations they can be accorded a certain indicative value. Often determinations in themselves subject to error can over a series give reliable evidence of general trend, for an essential unity of approach in original collection preserves such trend from obliteration. Census statistics of blindness are an example. Justifiable deductions of trend from such statistics as Madras birthrates could not however be made at all from the actual statistics, for the methods of original collection are in constant development and until they have settled down to a reasonably constant level and till observations on that level for a considerable series are available, deduction of birthrate progress from statistics alone is a perilous business.

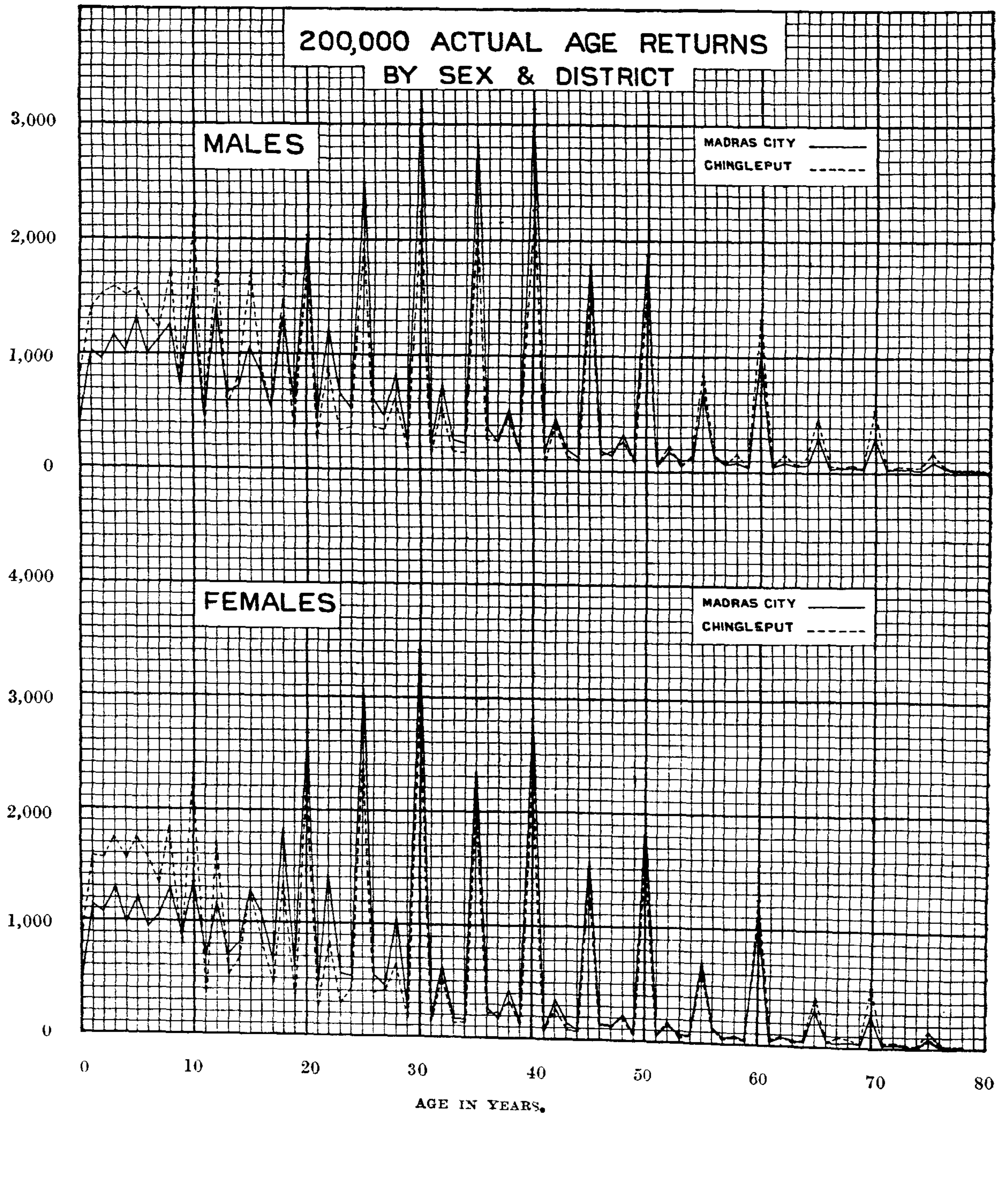
Discussion, analysis and prophecy can in fact safely be made only by those who have professional knowledge and experience to guide them in assessing the value of the original data. Mathematical treatment however careful and skilled is not enough where the facts dealt with are varying and uncertain. I have therefore abstained from pursuing any profound researches into the Madras vital statistics.

Actual age returns illustrated.

11. Two hundred and fifty thousand slips were sorted for actual ages, 100,000 from Madras City and from Chingleput and 50,000 from the Nilgiris. The slips were taken from Hindu Non-Brahman castes with, in the Nilgiris, some admixture of primitive tribes. The Madras and Chingleput slips were equally divided between the sexes. The graphs below show the Madras and Chingleput returns by sexes.

The figures and the graphs indicate the bunching that takes place at 5's and 10's. They indicate also, however, that this bunching is modified considerably in the first decade and to some extent in the second. In the first five years there is little apparent bunching at all. The number at age 3, for example, is greater than that at age 5 in two of the four curves and almost equal in a third, while the number at age 8 is greater than that at five in three out of the four curves. In both the male curves and in the Chingleput female curve the number at 12 exceeds the number at 15 while in all the curves, except the Chingleput males, the number at 18 exceeds that at 15 and in the case of Madras City females exceeds also that at age 12. The comparative evenness of the curve for the earliest years indicates, as has been said already, that in the first years of life age declaration is least inaccurate. The marked preference

for 12 in the male curves is of interest. This age is probably connected at least for boys with permissible age for entry into organized employment and in both sexes, but particularly for girls, is the convenient even number preceding the advent of puberty. The reasons for the marked preference for 18 in the case of females is not easy to discover. The slips, however, relate to Hindu Non-Brahman Tamils. Among the majority of Tamil Non-Brahman castes post-puberty marriage is the rule and 18 is taken as the age by which a girl ought to be married, i.e., five years after puberty. It is noticeable that 18 as a preference is most marked among females and it may be that this circumstance accounts in part for the preference. After the second decade the 0–5 preferences are the rule. The graphs bring out well the intermediate preference for 2 over all other digits. They show also how, as years go on, the plumping tends to concentrate on 0 and 5; i.e., the 2 and 8 points approach nearer to the level of all the others. The last stages of the curve are marked by sharp points for 0 and 5 and practical flatness in between with merely a mild bend to indicate the 2 and 8 preferences. The violence of the preference for the 0's is reflected in the uniform lowness of the 9's and 1's. This produces in the curve a steeple effect which shows how the first and last digits are robbed to make the zeros.

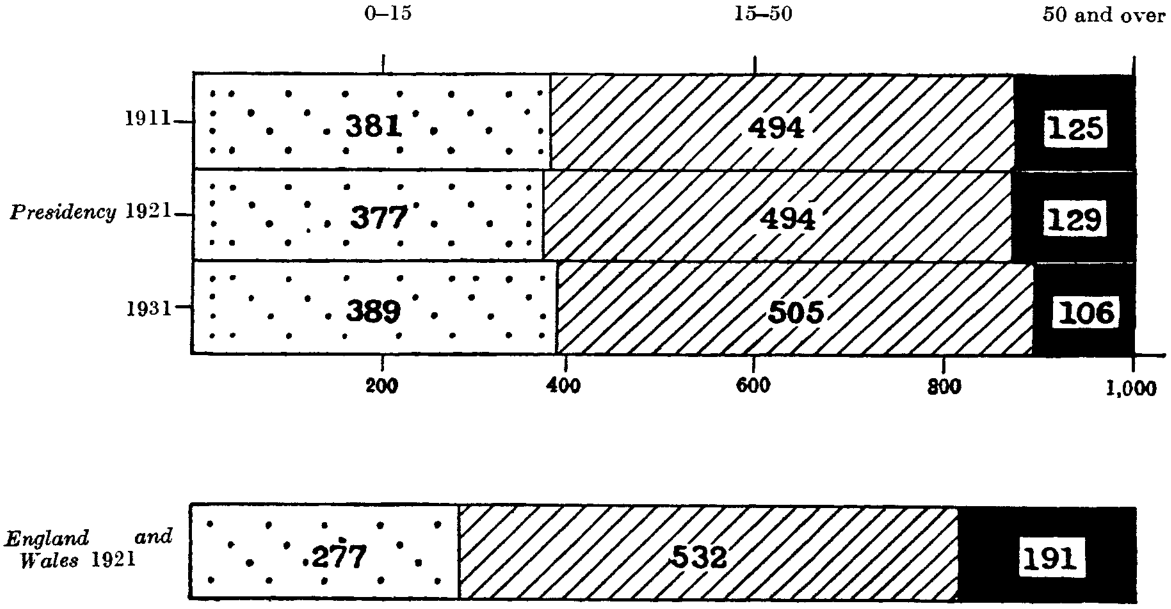


In both diagrams the Chingleput curve remains above the Madras City curve in the first decade, then tends to run below it and in the later stages accompanies it closely, save that it makes more marked bunching at the 5's and 0's. While age figures should not be strained too far it is probable that the uniformly higher range of the district curve in the earlier years reflects the greater proportion of young people there than in the city's population, a point dealt with elsewhere in the discussion of Sundbärg proportions.

For both districts 30–40 is the decade of chief aggregation for males and 20–30 for females.

Age Composition per 1,000.

1911-31.



Age proportions for province.

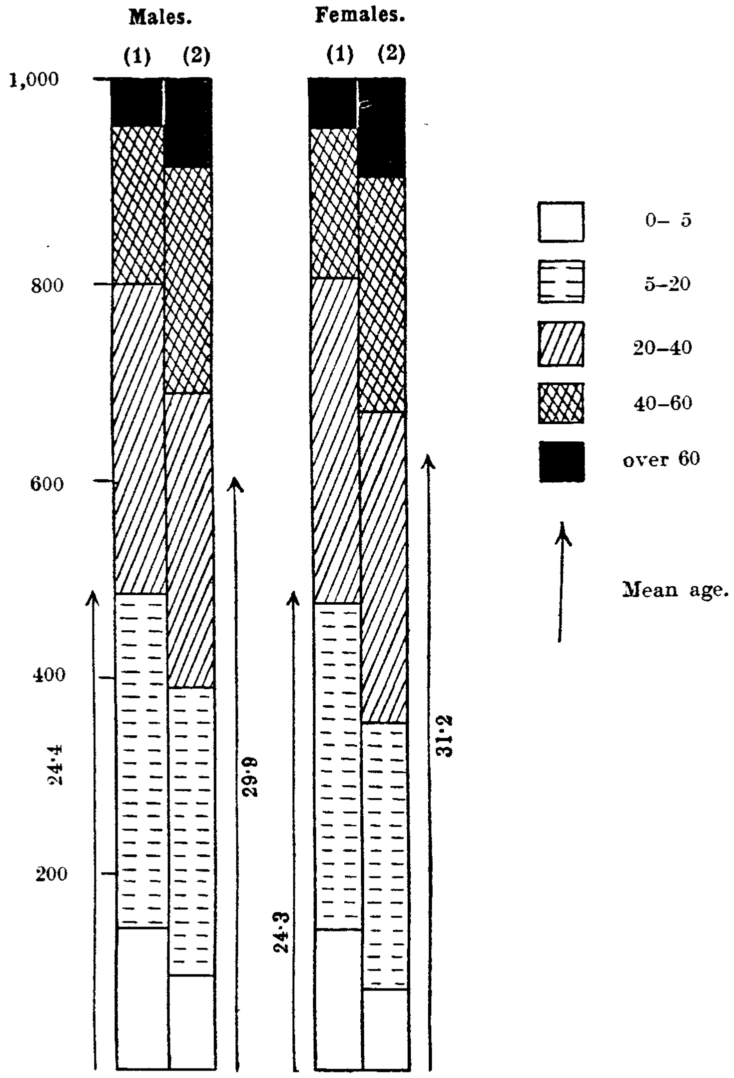
12. The diagrams above illustrate the age proportions for the presidency at the past three censuses and for England and Wales in 1921. They show at once the marked difference between the Madras and the British population in a much greater proportion of juveniles and less of persons over 50. The Madras population can be called definitely progressive, whereas that of England and Wales is of the stationary and accessive type.

The disparity in proportion between the extremes of the Madras diagram has increased since 1921 and is greater also than in 1911. The increase in disparity is due in almost equal proportions to a rise in the 0–15 and 15–50 sections at the expense of a heavy drop in the over 50. This is in itself an indication of the essentially progressive nature of the population and certainly any signs of movement towards the stationary type have yet to appear.

Age proportions by sexes.

13. In the margin is given an age proportion diagram for the presidency and for England and Wales by sexes. This affords material for some interesting comparisons. The Madras quotas at 0–5 are much the same for both sexes. Females are rather less at 5–20 and 40–60 and rather more at 20–40 and over 60. A notable feature in both the British columns is the much greater proportion of old. Ten per cent of the women and nearly 9 per cent of the men in England and Wales in 1921 were over 60. Corresponding Madras percentages are 4·7 and 4·6 ; the proportion is in fact half. The mean ages are shown by proportional arrows beside the rectangles. These illustrate the effects of the differing age distribution. The average age of English women in 1921 is nearly 7 years more than that of Madras women. For men the excess is $5\frac{1}{2}$. When one states the actual mean ages in question, 31·2 and 24·3, 29·9 and 24·4, one sees how much more heavily English ages lean towards the upper end of the scale.

Age Proportions per 1,000 by sex for Madras—(1) *and England and Wales 1921*—(2).



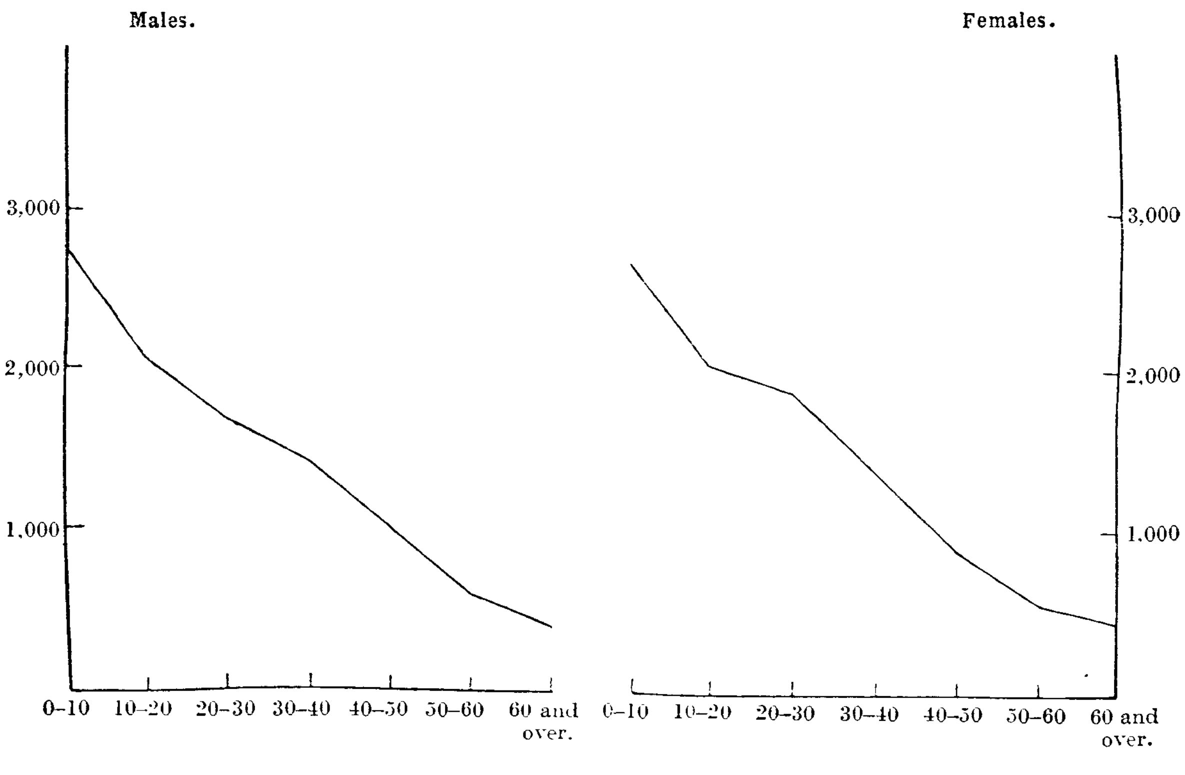
14. Subsidiary Table *i* shows the mean age for the province to be practically the same for both sexes and to be lower for both in 1931 than at any of the foregoing censuses. The same fact holds for every natural division save the East Coast North females whose mean age is slightly greater now than in 1921 but less than at any earlier census. The decrease is greatest for males in the East Coast Central, where the 1931 figure is nearly $1\frac{3}{4}$ years below the next lowest, and for females in the Deccan where the difference is over $1\frac{1}{2}$. It is least for females in the East Coast North and for males in that division and the West Coast.

There may be an inclination to deduce from these facts conclusions touching the general and particular effects of public health activities. A diminishing mean age means a greater proportion of young and the regional variations might be held to show that increased survival of children was most marked in the centre of the province. Emigration, however, has to be considered. The mean age can be lowered as much by a removal of older persons as by an actual increase in the young. Emigration is a potent remover of adults and in the East Coast North is practically confined to them and to males. From the West Coast too it is almost entirely a male phenomenon. Since in these two divisions the lowering in the male mean age is actually least, there remains little room to credit increased survival of children with the improvement. On the other hand, in the Deccan, whence emigration is least, the improvement for both sexes is marked. Birthrates seem to run higher in this region and it may be that more children are surviving here than used to. It is at least the case

that save for the females of East Coast North the drop in mean age over 1921–31 is greater than for any other intercensal period. Intensive public health activity in Madras is a development of the past decade.

It is interesting to observe that in the three emigration regions the male mean age is less than the female, the difference being less in the East Coast South where emigration is less exclusively male than in the West Coast where it is practically confined to them. It is less still in the East Coast North but here the real emigration zone is not the whole division but the two most northerly and the most southerly districts. If figures were taken for Ganjam and Vizagapatam it is likely that the male mean age would be much below the female. In East Coast Central, where emigration though a marked feature does not attain the proportions it does in the other three, the male age is only slightly greater. In the Deccan on the other hand it is nearly a year greater and only slightly less than this in the Agency. This is the first time over the five censuses that the male age has exceeded the female. This may reflect the selective influence of the influenza epidemic of 1918 on adults and especially females but in that case the effects should have been observable also in 1921, instead of which the mean age increased.

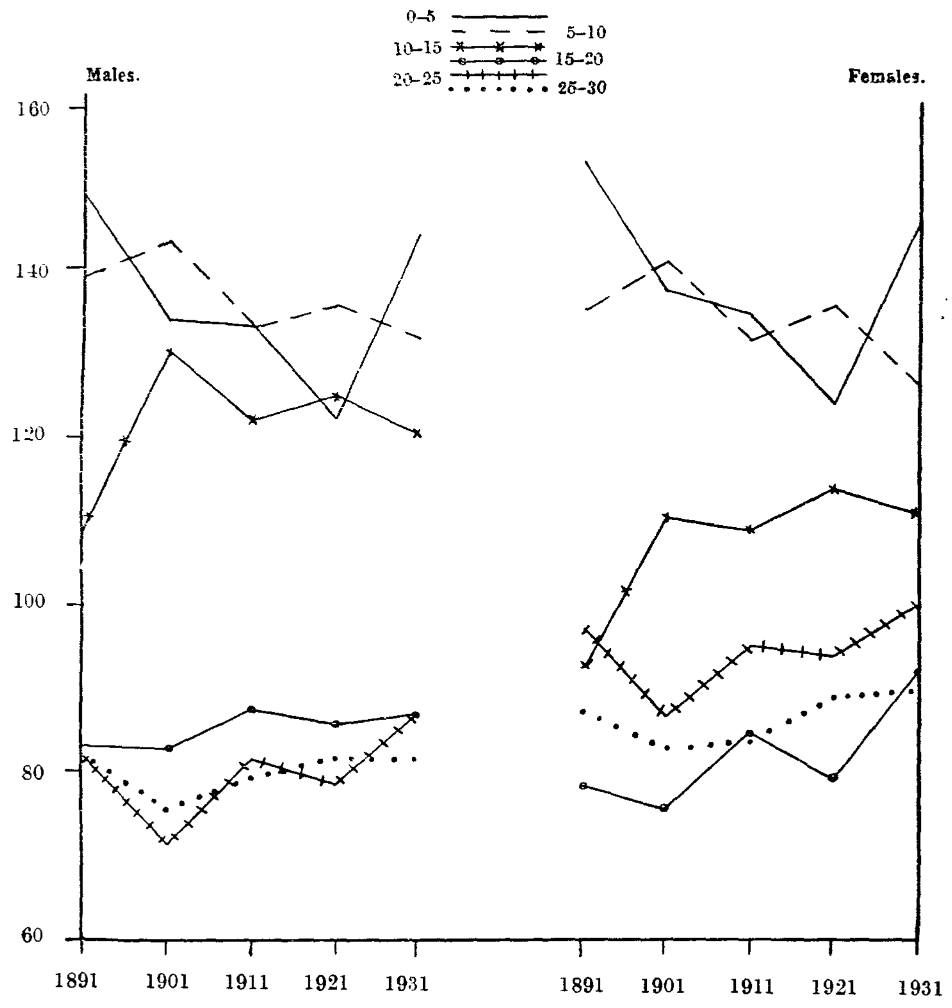
10,000 Population by age periods.



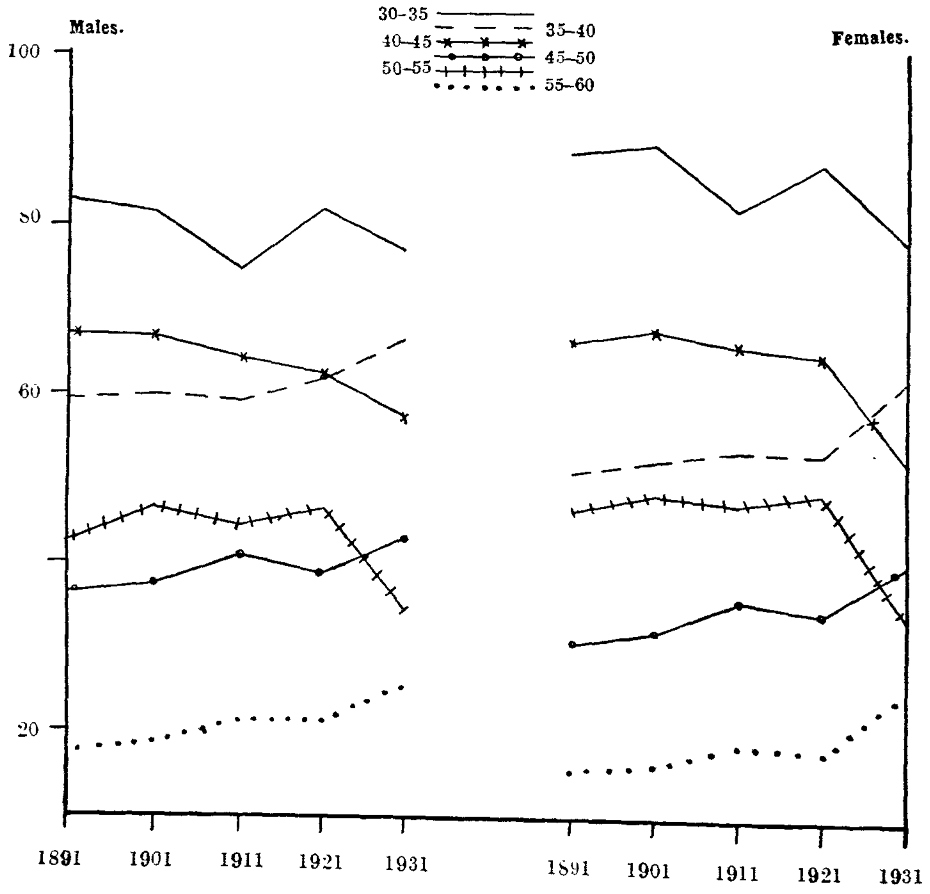
15. The diagram shows the composition of the sexes by age periods. In each the curve record is one of constant fall; the earliest ages make the greatest contribution. The internal behaviour of the two curves differs however. In each the down gradient lessens after age period 10–20 but the check is more pronounced for females and shorter-lived, for the steep fall recommences at 20–30 and continues till 40–50 when there is a slight check with a further check after 50–60. The curve, it may be said, has a pronounced shoulder and a distinct tail. In the male curve the shoulder is less pronounced and the tail shorter. From 10–20 to 30–40 the gradient is less and is least between 20 and 40. There is no apparent check in descent at 40–50 as for females; only after 50–60 does this appear. The curves show childhood as the most lethal period for both sexes but for females age 25–45 runs it close; these two sections of this curve are almost parallel. There is no such close approach in the male curve. The prime of life sees a greater relative toll among women, but more advanced years less. **Sexes by age periods.**

Age Group Histories, 1891-1931.

(i)



(ii)



16. The same information can be deduced from the curves which show for 1891–1931 the changes in age group contributions. While for ages 0–10 the two curves are on practically the same level the female curve falls markedly below its male counterpart at ages 10–20. At 20–25 it runs uniformly above and a similar though less marked superiority is observable for age 25–30. At 30–35 the female element is still higher but only slightly and at 35–40 has gone much below. From 40–45 and 50–55 the curves are on the same level but at 45–50 and 55–60 the female curve is again lower. **Age-groups since 1891.**

The diagrams also enable the age composition to be followed from 1891 and the varying behaviour related to possible causes. Over 1921–31 the first noticeable points are the rise for 0–5, marked for both sexes. 1911–21 shows a fall at this age-group but a fall not so marked as the present rise which has taken the infant quota for the first time back to 1891 levels. 1931 is at the same distance of time from the influenza pandemic as 1891 was from the great famine of 1878.

5–10 shows a fall over 1921–31 for both sexes, more marked among females; 10–15 shows a fall for both, less marked among females. Persons 0–5 in 1921 were 10–15 in 1931 and a fall was therefore to be expected. The effects of the influenza scourge can be seen here for the 0–5 group showed a sharp fall over 1911–21. Age 5–10 showed an increase over 1911–21. Persons aged 5–10 in 1931 were born between 1921 and 1926. The diminution in their numbers also reflects probably the effects of the influenza epidemic of 1918 through its influence on the birthrate, and might be connected with the diminution, particularly marked among women, of age-group 15–20 over 1911–21 and also 20–25. These comprised most of the accretions to parenthood in the early years of the decade and their diminution would find expression in fewer children born. It is in just such a case that the assistance of accurate specific vital statistics would be invaluable, for effects on birthrate could then be proved and not merely conjectured. As has been said, however, birthrate statistics existing will not stand extension to causal phenomena save of the most obvious kind and further lay speculation is not therefore justified.

40–45 shows a fall this time against a rise of age group 30–35 over the previous decade; it is difficult to account for this. The fall is much more pronounced for women. The decrease of this age group has continued since 1891 for men and 1901 for women, and here probably enter the effects of emigration.

50–55 shows a sharp fall. There was a fall in 40–45 ten years ago but much less pronounced. It is difficult to allot an explanation but increased emigration of persons between 40–45 during the decade would tend to increase the diminution suffered by the present 50–55 group as compared with the 40–45 group of 1921. Emigration did in fact increase.

17. In general these curves should show by their oscillations the effects of particular events, epidemics, wars, etc., and should show the corresponding successive stages of these influences. Where a steady trend is observable throughout a series covering more than the normal lifetime some permanent tendency might be deduced. A longer series would be required than is at present available in order to make any predictions. The present series dates only from 1891, not an adequate period. It might be argued that the curves show a tendency for the quota at more advanced ages to be on the increase. 45–50 and 55–60 for example have never gone back to the 1891 level. With growing interest in public health and medical activities prolongation of life is to be expected and a tendency for the upper age-groups to increase might be looked for. It is however impossible to make anything in the nature of deduction as yet and the age-groups for over 60 have dropped considerably at this last census. Though these advanced age figures are of little real value for any purpose their contradiction cannot be disregarded in a matter where nothing is determined and beyond doubt. **General conclusions.**

As already stressed, a longer series is required. We suffer in this matter of age movement speculation from too many variables and too few equations. Among the variables appears an element that should be providing equations,

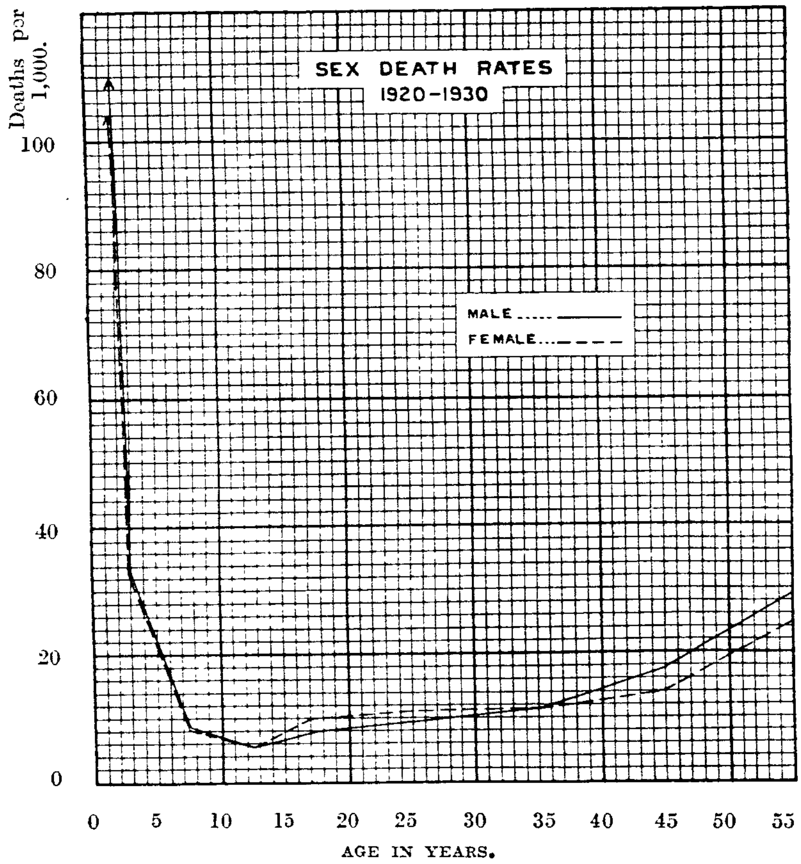
the vital statistics themselves. The effect of the variables may easily overlay and obscure existing tendencies. Hence the need for a long series of observations —practically a first principle in statistical matters—and for extreme caution in deduction and prophecy.

Differences between sexes at certain ages.

18. Some peculiar points emerge from a study of these curves. The proportion of women aged 20–25 is regularly, and that at 25–30 almost always, above the quota at 15–20. No such tendency is observable for males and it is in contradiction to the normal sequence of a continuous fall in quota from each succeeding age-group. The conclusion seems to be that at age 15–20 some particular incident supervenes in the life of Indian women. That incident is in all probability early marriage and child-bearing. Here vital statistics assist by their illustration of a persistent recurrence of a higher female deathrate for this stage in life. Subsidiary Table *ix-b* shows in every year of the decade that the female deathrate remains below the male from 0–10 years and is equal or close to it for ages 10–15. The next years see an invariably higher female rate, the disparity being oddly constant about an average of 2·5. The ten years 20–30 sees the female rate still higher but the disparity running about half the 15–20 figure. 30–40 again sees the rates practically equal, the tendency being for the male to be slightly greater. From 40–60 the male deathrate is regularly and considerably in excess.

These circumstances characterise not only figures of the past decade but of those previous also. It is the long continuation of similar changes that gives them their evidential value. As absolute records the birthrates are approximations, nothing more ; the tendential value of persistent recurrences is far above anything in the figures themselves. For similar reasons the constancy of the differential rate at ages 15–20 has much greater interest than the recorded sex rates from which it is derived, for it may be taken as a real indication of the dimensions of the difference and could be used for tentative calculations of the numbers of women lost to the country at this age period each year.

This report has suggested elsewhere that dy/dx is usually more important than y and the greater importance is not confined to mathematics but is a feature of life in general. This is particularly true of vital statistics. Even when the actual records approach to final exactitude it is the change, its rate and direction, that are important. This importance is enhanced when the original records contain an uncertain element, for while the single determinations have no final value, changes can be detected and usefully applied provided a long enough series of observations is available and provided there has been no essential variation in their collection. This is the parallel to the mathematical principle that to employ the differential it is not essential to know the absolute; dy/dx can be used without determining y. Where the actual collection of the original data is itself varying a complication is introduced which affects even

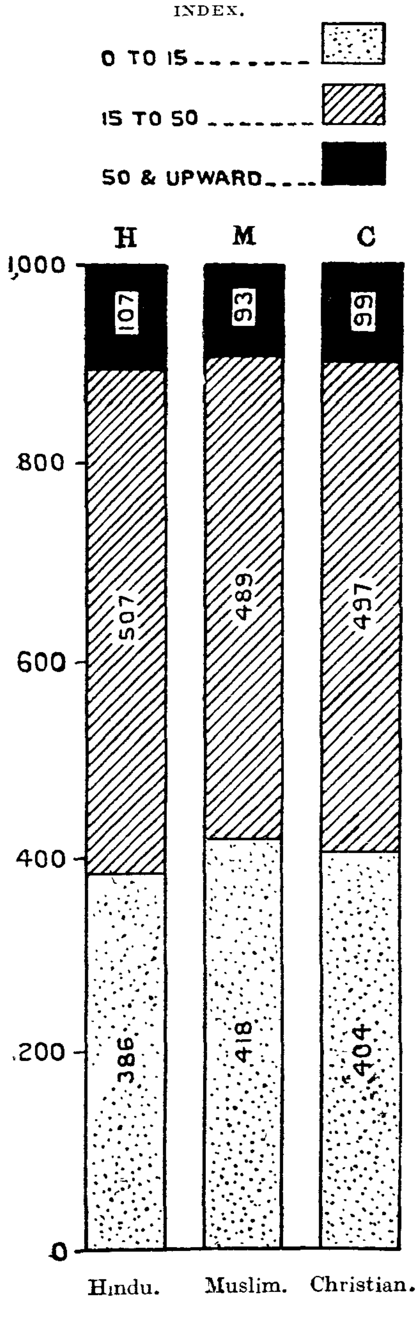


the differential and consequently where such changes or developments are in progress their effect on the data should always be carefully estimated at the time of publication.

In the deathrate curves shown, what is of importance is not the ordinate values but the coincidence of behaviour and age-period. These curves illustrate that at an age which corresponds with the entry upon married life Madras women suffer a largely increased deathrate, a circumstance in accord with the story of the age-group curves which show women at 15–20 as regularly constituting a smaller proportion of their sex than on ordinary reasoning and experience they should.

19. For both sexes the quota at 35–40 remained below that at 40–45 until this census. The same applies to 45–50 as compared with 50–55. The effects of emigration are probably present here. The curves show that consistently women aged 10–20, 35–40, 45–50 form a smaller proportion than men for the corresponding periods. The disparity in the first age group is attributable presumably to incidents of matrimony, though it is difficult to believe that early marriage and its effects have had so pronounced and so continuing an effect on the number of women alive at 10–15 as the curves would show. It may be that this group for women is always artificially lowered by the understatement of the ages of girls approaching the teens, an effect the passing of such legislation as Sarda Act was likely to intensify. It is difficult to put forward any theory accounting for the difference at middle age, but it may be that for 40–45 the cumulative effects of the differential circumstances to which women are exposed find expression at this stage. A greater proportion of women at advanced ages is in accordance with ordinary experience and the quota at 60+for women has always been greater. Women who survive the incidents of matrimony are in general longer lived than men. Consequently aged females contribute more to a thousand of their sex than aged males do to a thousand of theirs.

Age Proportion by religion.



Distribution by religion.

20. Subsidiary Table *ii* and the diagram in the margin show age distribution by religion. The most interesting point which emerges is that the Muhammadan quota at the lower age groups remains regularly above that of the others and that Hindus at ages 0–15 are steadily below the other two communities. A possible explanation of this may be gathered from a study of Subsidiary Tables *iii* and *iv* which give age distribution details for certain communities. The depressed classes have a larger element at the lowest ages than the Non-Brahman castes and these less than the Brahmans. It is from the lowest sections of the Hindu population that Islam and Christianity draw nearly all their recruits. Consequently the differential abundance of children may well be attributed in part at least to this circumstance. The point is dealt with in the chapter on Religion.

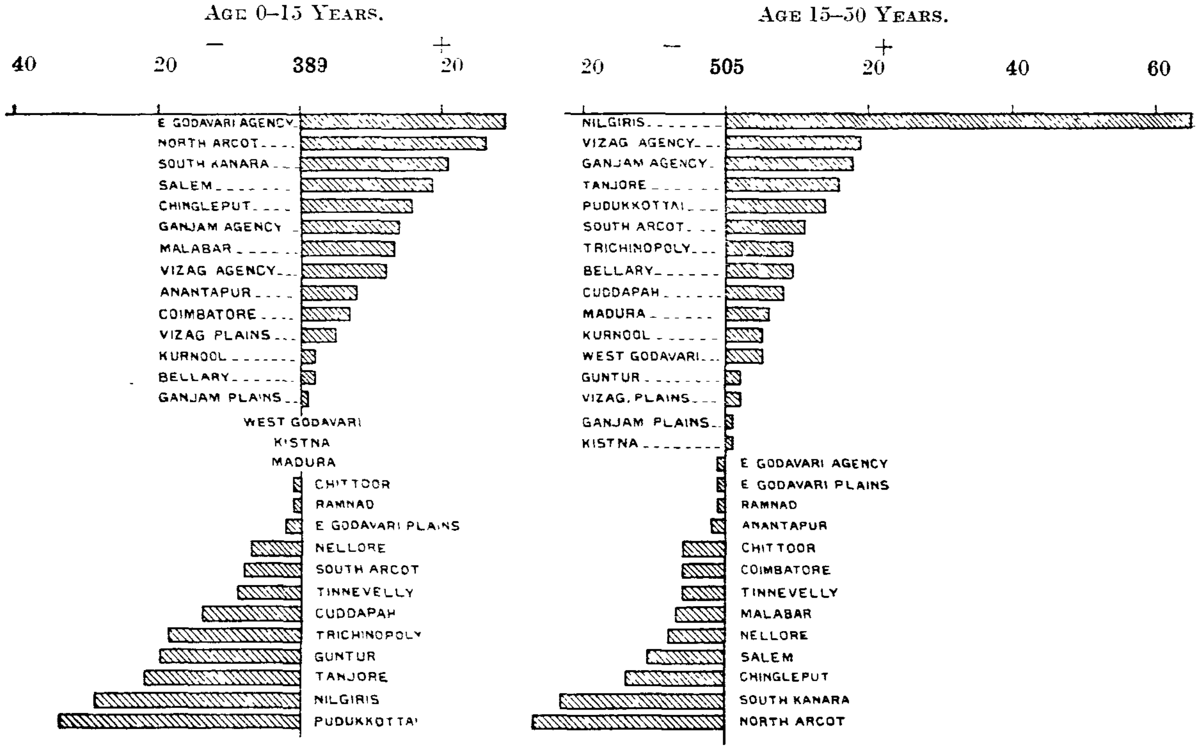
Distribution by region.

21. For purposes of age questions consideration by natural divisions is practically useless, for in this, as in other cases, the natural division figures mask real and illustrative district differences. Only perhaps for the Agency and the Deccan could natural division statistics be said to have any real illustrative value.

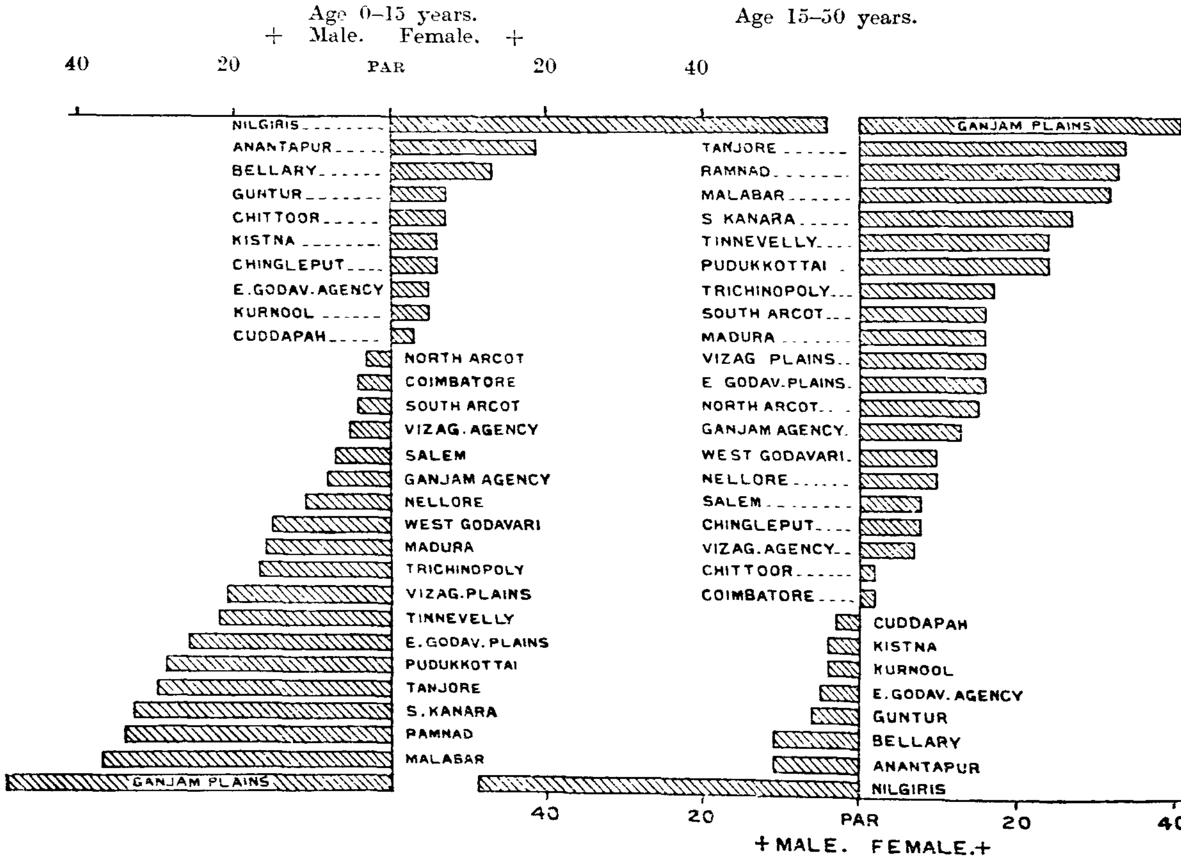
22. Age distribution figures have been taken out for districts and cities and are illustrated by the diagrams below and in paragraph 29. The much lower proportion of juveniles in Madras and the Nilgiris appears at once and reflects the artificial nature of the presidency town and a developing hill district much affected by immigration. The large proportion at the middle age group is a corollary. Madras and the Nilgiris have both the definitely accessive populations characteristic of all places favoured by extensive immigration. The proportions have been taken out by sexes and the differing ratios afford food for thought. At age 15–50 the male figure for the Nilgiris is 593, the female 544. This bears out that immigration to the Nilgiris is predominantly male.

AGE PROPORTIONS

District Divergence from Presidency Mean.



Sex Divergence in districts.



A glance at the district figures shows a higher juvenile element in the north than in the south. .Examples are Vizagapatam 394, Trichinopoly 370. The south tends also to have a larger proportion of old. The same two districts may be cited with 99 against 118. Sex proportions are here again of great interest. Ramnad, for example, seems on the total figures an almost exact approximation to the presidency average. The sex ratios show a wide divergence however, the female element at 15–50 being 53 per 1,000 above the male. Here is shown the influence of emigration and its general nature. Ramnad contributes heavily to Ceylon but more to the tale of casual individual emigrants than the organized family exodus so characteristic of Trichinopoly and the Tamil districts farther north. For Malabar, Tanjore, Tinnevelly and other districts the tale is the same of a markedly higher female proportion in the middle age group. Emigration's hand is clear. With these figures should be compared the figures for the immigration areas of the Nilgiris and Madras with their quota at 15–50. The effect of the different prefix is clear.

Ganjam plains supply one of the most violent differences, for the male proportion at 15–50 is 483 against a female 525. Emigration from the Circars to Burma is almost exclusively a male phenomenon, as the sex-ratio of 233 per 1,000 for Burma Madrasis quoted in Chapter III shows. Figures for the Ceded Districts show more divergence than might have been expected from an area so comparatively homogeneous. Cuddapah, Bellary and Kurnool, for example, have a markedly higher proportion at age 15–50 and Cuddapah again has a much higher quota over 50. On the whole, however, the figures illustrate the greater uniformity of these central districts.

Proportion of children by regions.

23. Subsidiary Table *v* shows that the proportion of children to persons in the prime of life has varied little over the last 40 years in the natural divisions, with one observable difference in behaviour that while the tendency seems to be for the proportion to diminish, the West Coast figure is above that for 1891. A similar comment applies to the figures showing the proportion of children to married women aged 15–40. Apparently the West Coast is more fertile than the other regions of the presidency. It should be remembered, however (see Chapter III) that women of the West Coast rarely emigrate; they remain at home with the children and this circumstance may have some effect in swelling these ratios. The widely differing sex ratios for Tamils, Telugus and Malayalis enumerated in Burma illustrate this point. The figures of married women of child-bearing age per 100 women of all ages show little alteration over the last 40 years. Here again the West Coast departs from the other divisions, for while the proportion in the others tends if anything to increase, that in the West Coast seems to tend downwards. Indications however are too slight so far to enable any deductions as to alterations in popularity of marriage to be made.

by community.

24. Subsidiary Table *v-a* is of some interest. The proportion of children to other sections of the population has oscillated rather since 1891 with a minimum in 1921 for every community but one, an obvious reflection of influenza casualties. The exception is the Christians, for whom the rate is lower now than in 1921. All other communities show a rise over 1921, most marked in the case of the Muslims. For all, including Christians, 1901 saw the maximum and the 1931 Christian figure is now farther from its maximum than any other. It is on the other hand nearer its 1891 figure than any other.

The natural divisions show peculiar variations. It is only the Christians of the north and centre who show a smaller child quota; the Deccan, the south and the west all show a rise. Hindus show also a fall in the north but no change in the south and a rise elsewhere, particularly in the west. The Muslims who over the province show the most pronounced rise and who are at their strongest in the west, elect this region also for their greatest increase. The Christian fall in the north seems to reflect conversion activities, adults probably figuring among converts in more than family proportions. Guntur district saw the greatest Christian accretion during the decade. The great rise in the Hindu Agency figure is merely an indication of the large numbers of aboriginals under the term 'Hindu' and the child quota now naturally approximates to that under 'Tribal' which in this natural division would more truly describe from a social point of view the great majority of the Hindus.

It is clear that no conclusions of differentially altering fertility can be drawn from these tables. It may possibly be ventured that there is no sign of the maxima of 1891 or 1901 being reached except on the West Coast but a longer series would be required before even this could be properly tested. Many variables enter to counsel caution in deduction ; thus the high Christian quota of children to married women aged 15–40 probably reflects merely later marrying ; the proportion of wives is smaller so the number of children is related to a smaller proportional number of women and the ratio consequently enhanced. It is significant that this Christian quota is greatest where the religion is oldest, in the south and west, and least where conversion has been most busy of late, in the north. The existence of conversion itself is a disturbing feature.

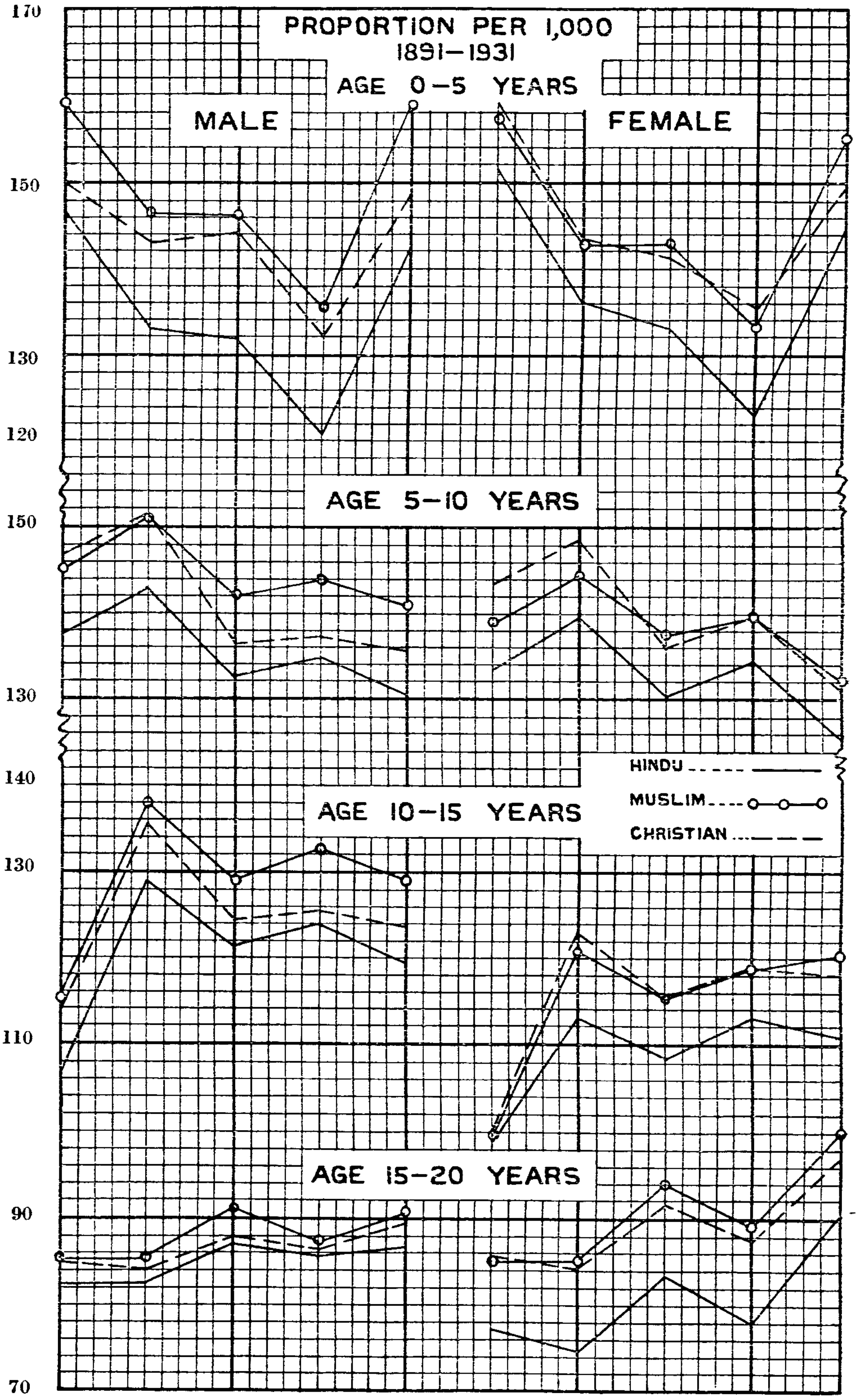
by caste. 25. Subsidiary Table *iii* repays a study. It is not without significance that of the seven communities with the highest proportion of children aged 0—6, six are depressed classes and one Muslim. The eighth and ninth are primitive tribes and not till the tenth do we come to a normal Hindu caste. Next come five more depressed classes. Of the twelve depressed communities all but one are in the first third of the list and half are in the first sixth. The high place of the single Muslim community (third in the list) is also significant. It is true that the selection covers a greater proportion of depressed communities than their community bears to Hindus but the circumstances above can hardly be explained altogether on that ground.

The remarks apply to the male part of the table. For females the depressed class predominance is less but even so they again occupy first place and seven out of the first seventeen. The Labbais this time are fifteenth instead of third, their small-girl proportion being much less than their small-boy one. There are some curious differences between the boy-girl quotas. In most cases they run much the same but among Oriya castes the girl proportion is invariably lower and for Dandasis and Bavuris (both depressed classes) the margin is pronounced. It is considerable also among Oriya Brahmans and Kalingis, both characteristic Ganjam castes. A similar markedly greater boy proportion appears in the Kanara depressed caste, the Holeyas. Among Malayalam Brahmans, on the other hand, girls aged 0–6 are a much larger proportion of their sex than boys of 0–6 are of males. The Deccan Boyas show a similar disparity and the primitive tribes incline also to have a larger girl proportion at the first age group.

The last place is occupied for males by Malayalam Brahmans. Next are Telugu Brahmans and Arya Vaisyas. Razus follow, then Tamil Brahmans and Telugu Visvabrahmans. For females, omitting the Anglo-Indians, the lowest place is occupied by the small Kadan tribe, followed by the Aryavaisyas, Razus and Telugu Brahmans. The interesting feature of this distribution is the undue proportion of Telugu communities among those with fewest young persons in their numbers.

Subsidiary Table *iv* illustrates the same facts as *iii* from a different viewpoint. In proportion of children to persons in the prime of life eight places out of the first ten are occupied by depressed classes. When the ratio is to women of child-bearing age they retain first place but their share of the top places drops to four out of the first six, and seven out of twelve, still a considerable share. Anglo-Indians lead easily in this column ; their presence is illusory and indicates the dangers of taking statistics at their face value. The high figure reflects their much smaller proportion of married women at ages 14–43 which the last column of the subsidiary table shows as far below that for any other community. Some closer enquiry would be necessary before this apparent differential fertility, or most of it, could be taken at its face value. Other factors probably enter.

In general, the tables indicate that Madras offers no exception to the rule that communities lowest in the social scale breed most freely. The presence of Brahmans at the other end and of such prosperous castes as the Aryavaisyas and Razus carries the inverse implication. The Razus' low position is of particular interest ; it is in such prominently landowning, intelligent communities, conscious and jealous of their position and influence, that a realization of the dangers of undue increase in numbers makes in all lands its first appearance and their smaller apparent increase ratio may be a reflection of this.



26. The diagrams above illustrate from 1891 to 1931 the proportion of the population of the three chief religious communities formed by young persons at the four lowest age groups. The almost invariable order is Muhammadan, Christian, Hindu. The lead of the first two communities over the third is most pronounced at the earliest group in both sexes, and among females between 10 and 20. The graphs bear a close resemblance to those for the corresponding age groups for the entire population. For males at age 15 to 20 the difference between the three curves has notably diminished. **Age distribution by religion.**

Madras vital statistics show as a continuing feature a Muslim birthrate higher than that for the other two communities. Where a feature is repeated again and again it justifies a relative conclusion. That is, while the recorded

Muslim birthrate in 1930 of 41·68 is as an absolute determination merely an approximation we can deduce from the fact that the Muslim approximation, subject to the same uncertainties of origin and collection, regularly exceeds the Hindu and Christian approximations, that birthrate does run higher among that community. The 1930 figures are shown in the margin. I have omitted the two places of decimals given in the Public Health Report. They can hardly be credited with much value. The figures run year by year in the same order. Though natural increase is equal in the above table for Muslims and Christians the indications of the discarded fractions taken with the figures of past years go to show that the Muslim increase is in fact larger. A consideration of community intercensal increase has already shown us that Muslims recorded a greater increase than Hindus but less than Christians. In both cases positive accretions by conversion affect the increase rates but a consideration of the curves above which show a steadily higher juvenile quota for the two minorities, along with the evidence of a regularly higher birthrate and birth-death difference justify the conclusion that a greater fecundity among them plays some part in their more rapid growth, a part most marked among the Muslims. Various explanations have been adduced why this should be so and a common one is to attribute the greater fecundity to the beneficial effects of later marriage. There is something in this in all probability and the fertility tables printed at the end of the next chapter seem to indicate a greater productivity as attendant upon a reasonable age for beginning married life. It is impossible not to feel however that this explanation is overworked. Marriage and cohabitation are not necessarily simultaneous and unduly early marriage is not the practice of the majority of Hindu castes. The difference in birthrates is not extreme. It is suggested elsewhere that the minority communities contain a larger proportional element from the lowest strata of the population, in every country the most productive of offspring, and to this must be attributed much of their differential fertility.

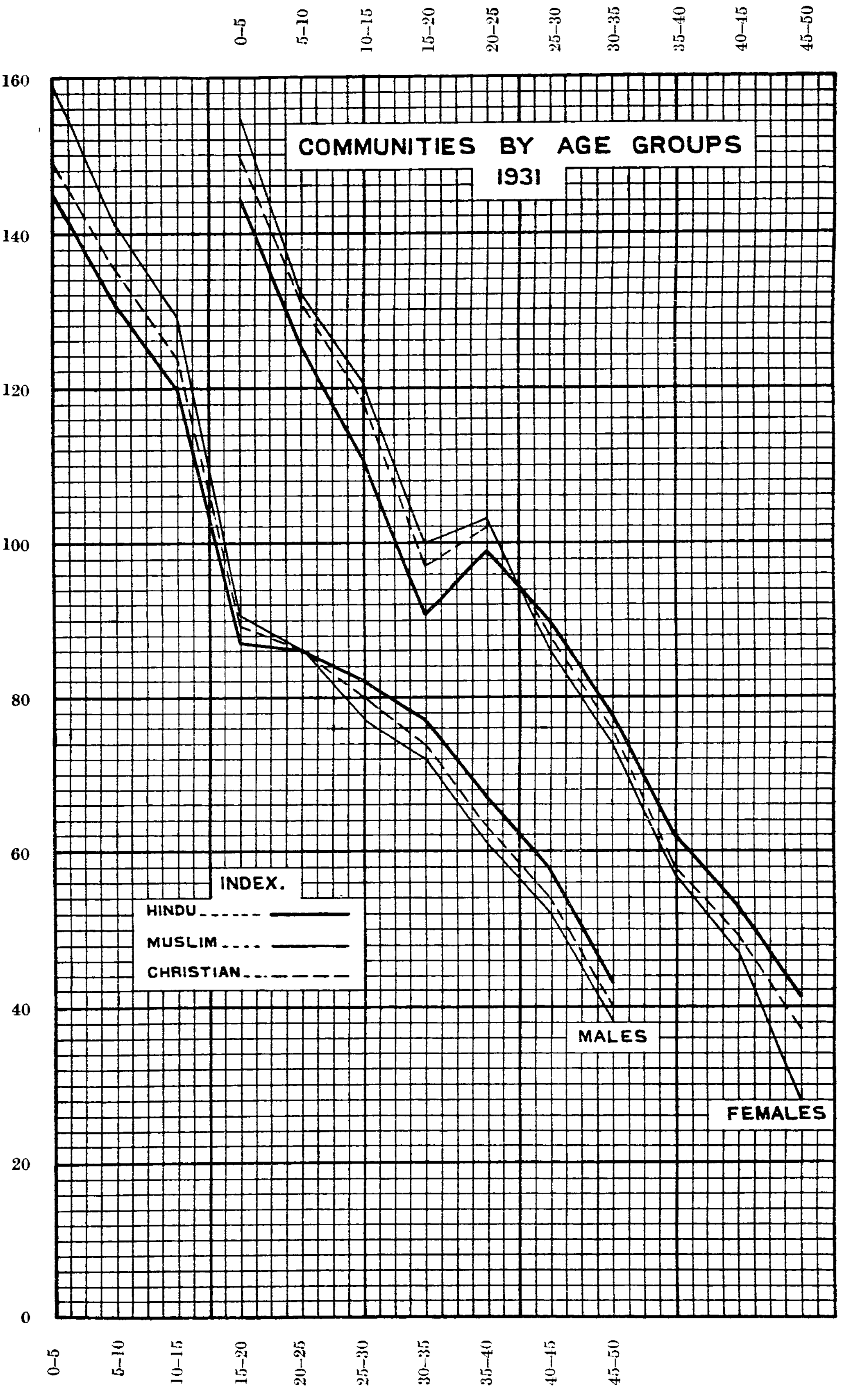
	Birth.	Death.	Difference.
Muslim	42	26	16
Christian	40	24	16
Hindu	38	25	13

Distribution by religion since 1891.

27. With these curves and facts should be examined the curves below which in effect continue the comparative community histories beyond age 20 for 1931 and with them give a complete survey of distribution and tendency up to age 50. No plotting was done for age-groups beyond 50 as the determination of ages is too uncertain at that stage to justify insertion in an age-composition curve.

The age-group diagram offers some features of considerable interest. The first is the saddle effect which occurs in both curves between ages 15–20 and 20–25. This is a reproduction in greater detail of the shoulder effect already commented on in paragraph 14. The smaller age-unit in plotting has localized and intensified the effect. This is so marked in the female curves as to produce an actual ascent. But for the presence of this saddle both sets of curves would approximate fairly well to the normal age curve descent. It seems clear that some peculiarity in age-return is present. It may be that effects of early marriage are present to some extent in reducing the quota at age 15–20 ; but this cannot be the sole cause, for otherwise the male curve would not also show a pronounced saddle. The accentuation of the phenomenon in the female curve may possibly reflect some such circumstance but the saddle effect common to both must be referred to some common cause. The general shape of the curves seems to show that age-group 15–20 has been robbed to supply the groups preceding and following it. Major-General Megaw, when carrying out an enquiry in Calcutta, found a similar saddle effect in a curve dealing with the months of the year. The cause of this was the avoidance by all persons concerned of a certain unlucky month. It may be that some parallel circumstance is present to produce the saddle effect in these curves, and the general discussion on age return peculiarities throws some light. The Indian outlook on age is, as remarked, much more functional and the advent of so pronounced a vital phenomenon as puberty exercises probably a considerable influence on age returns. If it has arrived the tendency will be to attribute definitely mature years ; if it has not the tendency may be

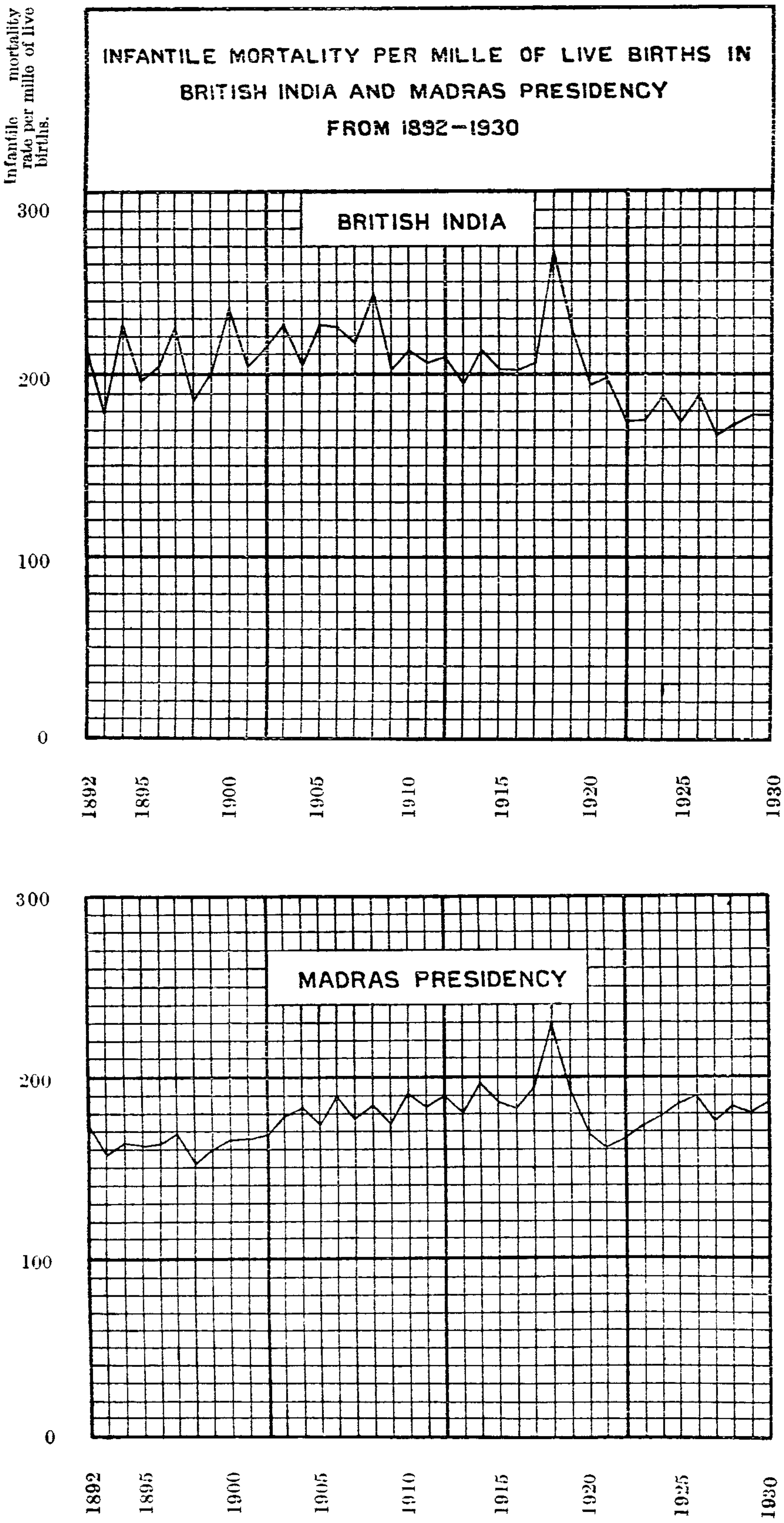
to diminish the actual tale of years due. Much of this is of course conjectural but the actual age return curves dealt with already do show peculiar aggregations at ages between 10 and 15 and after 20.



The curves bear out the indications of other diagrams in this chapter—that Muhammadans and Christians have a steadily greater proportion of their community at the lower age years and a steadily less at the upper. The change over seems to come earlier for men than for women by about two years

if the curves are to be relied on. The Christians occupy steadily a middle position between the two major communities, approximating on the whole rather to the Muhammadan than to the Hindu behaviour. It is noticeable that the saddle effect already referred to is much less in the case of Christian and Muhammadan females than Hindus and taking the curves as a whole the Christian departs less from the normal age curve shape. This may possibly be taken to indicate a closer approximation to accuracy in age returns among this community and a less effect from such disturbing factors as early marriage.

Infantile mortality.



28. A matter intimately connected with age quotas and community variations is infantile mortality. It is unfortunate that public health reports give no sex and community figures for this but content themselves with a gross presidency figure. It is not as absolute determinations that these would have value but continuing tendencies or differences might appear, as in the community birth-rates, from which legitimate or at least tentative deductions might be drawn. Regional differences here too might throw light on many points of obscurity, e.g., female deficiency in the Deccan. The curves in the margin, reproduced by courtesy of Colonel Russell, illustrate for Madras and British India the course of infantile mortality returns for 38 years.

The influenza visitation is the only circumstance clearly reflected in the 38 years. So far as Madras is concerned the curve exhibits remarkable regularity with a tendency if anything upwards since 1918. Other province curves and that for British India display a downward trend.

Uninformed persons surveying the downward tendency of the British India curve might conclude that baby welfare activities are bearing fruit. If so then the levelness of the Madras curve might be regarded as an indication that similar activities in Madras had been less fruitful. The latter would be particularly surprising since Madras has more child welfare work in operation than any other province. Both conclusions would be wrong and neither could be justified from the curves in any case. Colonel Russell has shown in his comments on these curves that the downward trend began before welfare work could possibly have exercised any effect. Such general comparisons illustrate the dangers of deduction from statistics which contain within themselves uncertain elements. It is possible that an improvement in the Madras registration has masked the effect of an improvement in the infantile mortality. Until the figures can be accepted as absolute determinations short-period comparisons are more than usually invidious, are in fact totally unjustified.

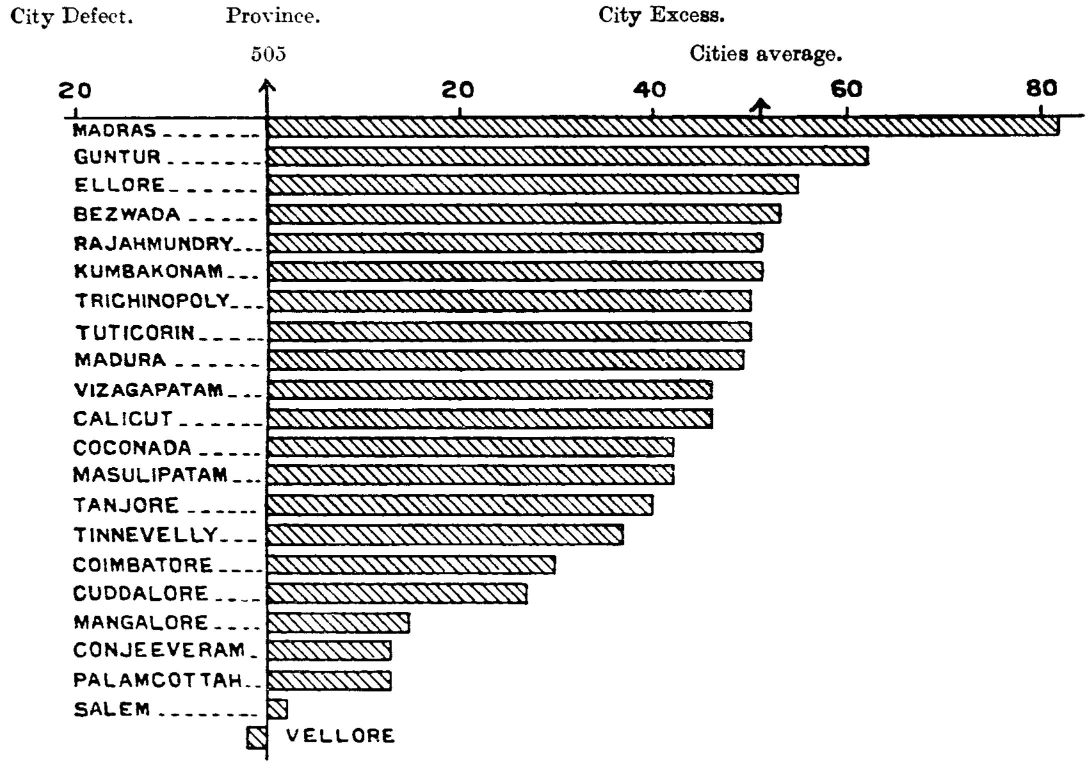
The only way in which such curves can be used is by study of pronounced variations or recurrences or of long-period features. Marked peaks such as that in 1918 do indicate a disturbing feature and causal speculation and connection are justified. Also the fact that throughout the 38 years covered by the graphs the Madras rate has remained steadily lower can justify certain conclusions. There is no reason to believe Madras statistics to have been notably and constantly less full or accurate than those of any other province ; indeed belief would probably be in the other direction. (Absolute accuracy of course is not in question.) Consequently it is a justifiable deduction that infantile mortality in Madras is probably less than in other provinces. Such a conclusion would be in accord with Madras' position as a pioneer in public health activities.

Another conclusion would be that whatever the deviation of the statistics from absolute value, the level of the mean and the absence of frequent violent oscillation, justify an estimate of the general dimensions of the mortality rate as somewhere towards the second hundred. Such a rate is very high compared with western standards. To some extent it is an inevitable corollary of a high birthrate but to a greater extent it represents preventable elements of ignorance or neglect. Three per cent of rural labour cases in the presidency in 1930 received skilled aid. When this is compared with a corresponding figure of 80 per cent in England and Wales one reason for higher infantile mortality and one way of reducing it are apparent. A good deal of attention has been given recently in Madras to maternal and infantile mortality in the direction of exhaustive investigation over a limited area and the results should be of interest and value.

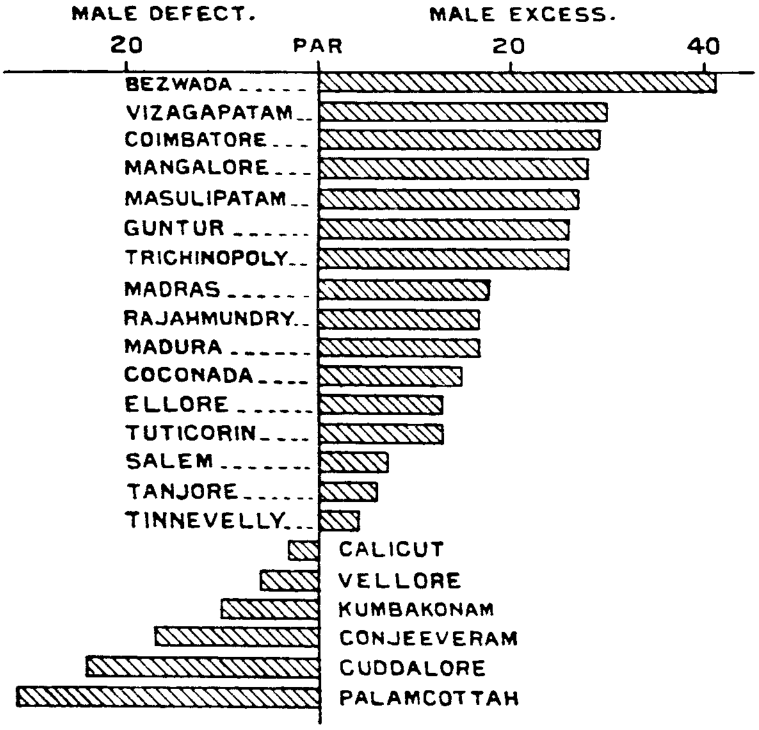
Age proportions in cities.

29. The diagrams following illustrate some aspects of age constitution in cities as compared with the province as a whole. One expects in a city a greater aggregation of persons in the prime of life. This is a commonplace in all countries. The variations in the proportion of middle-aged indicate to what extent a city is definitely resorted to by outsiders and the detail in the second diagram shows whether that accession is predominantly male or female. In Chapter III Madras' small proportion of homeborn was mentioned, and that finds illustration in its presence at the top of the first diagram. Its first four successors are all from the Telugu deltas. The first three of these are rapidly growing towns and the fourth is an old established city and the true centre of the region. Vellore is the only city with a smaller proportion at age 15–50 than the province as a whole. Salem differs only by two from the province quota. Palamcottah, Conjeeveram and Mangalore are all together, much lower than the rest. This low divergence from the province rate may be taken to indicate the greater degree to which those cities reflect the conditions of the district within which they lie and the less degree to which they possess the true immigration-attracting characteristics of a growing city. The residential aspect of Palamcottah, Conjeeveram and Vellore is marked, while Salem in many ways resembles more mufassal than city.

Proportion per 1,000 at age 15–50 for cities as compared with province.



15–50 PROPORTION BY SEXES



Bezwada's place at the top of the second diagram coupled with its high rank in the first brings out what was already referred to in Chapter III—the extent to which adult males resort to this great communication centre. Bezwada's population is probably in some ways more artificial than that of any other town in the presidency, and is likely to remain so. A glance at its long railway platform on any day will disclose more and more widely differing types than a similar scrutiny in almost any other town of the presidency. Vizagapatam and Coimbatore follow. Both these have seen much advent of males during the decade. Similar remarks apply to Guntur and Trichinopoly.

The towns where the sex proportions differ least are again those which depart least from district conditions. Salem once more figures in this number. Calicut, though a flourishing city, is less of an exotic in Malabar than, say, Coimbatore, Bezwada or Guntur are in their respective districts; residence

in it has much more of the normal, hence the much evener balance of the sexes. The four towns in which the female proportion is markedly less than the male, differ to some extent in their characteristics and in the explanations one might offer for the difference. Where the female adult proportion is much above the male it may be taken to indicate a city from which men go in search of work, and this description might apply certainly to Palamcottah and probably to Conjeeveram and Cuddalore also. With Palamcottah's rectangle in this diagram should be compared the rectangle of similar length for Coimbatore. Men flock into the one town in search of work; they flock out of the other on a similar quest.

Kumbakonam is an educational residential centre and its accessions reflect a more normal balance of population. The same applies to Tinnevelly, and to a less extent to Tanjore, Salem and Vellore. All are representative of natural population and residential centres rather than of developing industrialism or commerce, and accretions are therefore less likely to diverge widely in type.

i.—Age Distribution of 10,000 of each sex in the Province and each natural division.

Age.	1931. M.	1931. F.	1921. M.	1921. F.	1911. M.	1911. F.	1901. M.	1901. F.	1891. M.	1891. F.
Province										
0–1	277	280	260	259	285	284	294	297	330	338
1–2	279	282	152	153	173	177	158	161	171	178
2–3	298	305	246	254	283	285	280	288	315	327
3–4	300	303	287	298	309	315	310	322	352	365
4–5	287	284	275	275	283	280	297	300	314	316
0–5 ..	***1,441***	***1,454***	***1,220***	***1,239***	***1,333***	***1,341***	***1,339***	***1,368***	***1,482***	***1,524***
5–10	1,314	1,259	1,356	1,350	1,334	1,312	1,434	1,406	1,391	1,346
10–15	1,203	1,118	1,248	1,136	1,220	1,091	1,300	1,140	1,084	923
15–20	870	916	856	791	876	845	825	757	828	783
20–25	865	997	783	937	817	947	711	863	820	973
25–30	815	896	816	887	792	836	755	824	821	865
30–35	766	776	817	868	745	816	816	891	828	885
35–40	666	615	616	527	590	533	599	520	592	505
40–45	573	521	624	646	643	656	670	675	670	661
45–50	428	399	388	342	410	355	376	320	365	305
50–55	346	333	465	482	454	468	465	480	427	460
55–60	255	250	217	182	218	189	190	162	177	157
60–65	209	211	308	325	295	320				
65–70	105	105	96	86	94	90	520	594	515	613
70 and over ..	144	150	190	202	179	201				
Mean age ..	**24·4**	**24·3**	**25·5**	**25·5**	**25·1**	**25·3**	**24·5**	**24·8**	**24·6**	**25·0**
Agency										
0–5	1,547	1,628	1,090	1,077	1,321	1,402	1,197	1,346	1,023	1,158
5–10	1,379	1,317	1,497	1,455	1,584	1,560	1,539	1,532	1,264	1,254
10–15	1,140	1,064	1,300	1,443	1,158	1,023	1,249	1,074	1,023	896
15–20	759	930	802	824	793	850	814	892	711	768
20–40	3,391	3,488	3,428	3,464	3,278	3,469	3,293	3,514	2,613	2,759
40–60	1,502	1,274	1,532	1,381	1,546	1,334	1,584	1,289	1,251	1,028
60 and over ..	282	299	351	356	320	362	324	353	291	323
Not stated ..	..	..	..	..	..	..	..	..	1,824	1,814
Mean age ..	**23·3**	**22·6**	**24·3**	**23·5**	**24·0**	**24·5**	**24·9**	**24·3**	**24·7**	**24·7**
East Coast North										
0–5	1,407	1,413	1,167	1,178	1,300	1,295	1,318	1,356	1,391	1,456
5–10	1,317	1,248	1,401	1,376	1,414	1,371	1,445	1,393	1,459	1,396
10–15	1,215	1,114	1,339	1,180	1,303	1,131	1,357	1,154	1,246	1,037
15–20	893	955	861	795	841	806	817	754	820	771
20–40	3,117	3,251	2,887	3,124	2,850	3,017	2,829	3,057	2,892	3,088
40–60	1,575	1,494	1,695	1,644	1,679	1,631	1,682	1,624	1,612	1,542
60 and over ..	476	525	650	703	613	689	552	662	578	708
Not stated ..	..	..	..	..	..	..	..	..	2	4
Mean age ..	**24·4**	**24·5**	**25·3**	**24·3**	**26·1**	**26·8**	**25·5**	**26·6**	**25·7**	**26·6**
Deccan										
0–5	1,352	1,462	1,055	1,163	1,140	1,209	1,148	1,254	1,380	1,503
5–10	1,300	1,337	1,312	1,394	1,243	1,302	1,412	1,483	1,342	1,364
10–15	1,189	1,140	1,284	1,201	1,241	1,186	1,371	1,261	826	720
15–20	862	890	768	679	824	784	705	604	720	662
20–40	3,267	3,332	3,256	3,303	3,036	3,135	2,932	3,080	3,455	3,517
40–60	1,575	1,384	1,658	1,607	1,862	1,731	1,883	1,698	1,768	1,614
60 and over ..	455	455	667	653	654	653	549	620	506	616
Not stated ..	..	..	..	..	..	..	..	..	3	4
Mean age ..	**24·6**	**23·8**	**26·1**	**25·4**	**26·1**	**27·1**	**26·7**	**26·7**	**27·0**	**27·2**
East Coast Central										
0–5	1,455	1,525	1,253	1,329	1,357	1,417	1,381	1,446	1,576	1,644
5–10	1,307	1,295	1,353	1,391	1,271	1,300	1,442	1,461	1,354	1,344
10–15	1,196	1,136	1,197	1,096	1,200	1,099	1,288	1,155	994	859
15–20	866	894	839	764	899	852	817	713	809	752
20–40	3,103	3,253	3,050	3,211	2,914	3,085	2,815	3,051	3,107	3,281
40–60	1,602	1,463	1,704	1,639	1,782	1,678	1,728	1,621	1,656	1,558
60 and over ..	471	434	604	570	577	569	529	553	503	561
Not stated ..	..	..	..	..	..	..	..	..	1	1
Mean age ..	**23·9**	**23·8**	**25·6**	**25·1**	**26·4**	**26·3**	**25·7**	**25·9**	**25·9**	**26·2**
East Coast South										
0–5	1,417	1,368	1,256	1,221	1,393	1,345	1,415	1,363	1,519	1,471
5–10	1,301	1,215	1,316	1,294	1,326	1,269	1,417	1,344	1,373	1,299
10–15	1,181	1,077	1,175	1,056	1,135	989	1,188	1,020	1,044	865
15–20	850	877	877	789	858	818	837	764	847	775
20–40	3,092	3,339	2,998	3,233	2,909	3,141	2,860	3,105	2,968	3,191
40–60	1,686	1,654	1,781	1,777	1,789	1,793	1,735	1,769	1,702	1,750
60 and over ..	473	470	597	630	590	645	548	635	545	647
Not stated ..	..	..	..	..	..	..	..	..	2	2
Mean age ..	**24·8**	**25·1**	**25·9**	**26·3**	**26·5**	**27·3**	**25·9**	**27·1**	**26·0**	**27·3**
West Coast										
0–5	1,576	1,488	1,365	1,306	1,388	1,337	1,348	1,322	1,528	1,524
5–10	1,340	1,214	1,339	1,238	1,319	1,227	1,412	1,320	1,371	1,268
10–15	1,277	1,166	1,284	1,166	1,277	1,156	1,381	1,243	1,228	1,092
15–20	918	979	940	934	1,018	1,036	964	965	952	973
20–40	2,936	3,213	3,082	3,292	3,120	3,240	3,040	3,178	3,080	3,186
40–60	1,544	1,476	1,554	1,538	1,478	1,500	1,461	1,469	1,438	1,432
60 and over ..	409	464	436	526	400	504	394	503	401	523
Not stated ..	..	..	..	..	..	..	..	..	2	2
Mean age ..	**23·4**	**24·1**	**24·1**	**26·2**	**24·7**	**25·5**	**24·3**	**25·2**	**24·3**	**25·2**

ii.—Age Distribution of 10,000 of each sex by main religion.

Age.	1931.		1921.		1911.		1901.		1891.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
1	2	3	4	5	6	7	8	9	10	11
Hindu										
0–5	1,427	1,443	1,208	1,228	1,319	1,330	1,330	1,362	1,470	1,515
5–10	1,304	1,252	1,346	1,342	1,323	1,302	1,425	1,399	1,379	1,533
10–15	1,196	1,108	1,242	1,130	1,216	1,085	1,293	1,132	1,072	911
15–20	867	907	857	779	874	835	822	746	824	773
20–40	3,124	3,290	3,035	3,217	2,944	3,132	2,884	3,097	3,062	3,230
40–60	1,619	1,526	1,711	1,676	1,748	1,694	1,720	1,659	1,653	1,596
60 and over ..	463	474	601	628	576	622	526	605	519	620
Not stated ..	..	..	..	..	..	..	..	..	21	20
Mean age	**24·49**	**24·41**	**25·6**	**25·7**	**25·3**	**25·5**	**24·6**	**24·9**	**24·4**	**24·8**
Muslim										
0–5	1,588	1,552	1,356	1,328	1,461	1,428	1,463	1,428	1,592	1,576
5–10	1,413	1,321	1,442	1,400	1,419	1,379	1,510	1,444	1,453	1,380
10–15	1,287	1,206	1,323	1,192	1,292	1,157	1,380	1,207	1,151	976
15–20	906	1,001	877	892	915	940	857	843	854	851
20–40	2,958	3,198	2,964	3,203	2,900	3,087	2,809	3,059	2,972	3,167
40–60	1,433	1,313	1,513	1,449	1,502	1,458	1,492	1,473	1,479	1,462
60 and over ..	415	409	525	536	511	551	489	546	497	586
Not stated ..	..	..	..	..	..	..	..	..	2	2
Mean age	**23·09**	**22·95**	**24·1**	**24·2**	**23·7**	**24·0**	**23·2**	**23·7**	**23·3**	**32·9**
Christian										
0–5	1,488	1,498	1,320	1,353	1,442	1,417	1,429	1,434	1,581	1,591
5–10	1,355	1,312	1,376	1,400	1,361	1,358	1,517	1,486	1,470	1,438
10–15	1,238	1,182	1,257	1,191	1,244	1,159	1,356	1,230	1,139	1,019
15–20	894	969	862	875	880	916	843	828	852	858
20–40	3,045	3,236	2,952	3,145	2,892	3,079	2,756	2,998	2,933	3,097
40–60	1,524	1,389	1,638	1,520	1,622	1,541	1,603	1,513	1,541	1,465
60 and over ..	456	414	595	516	559	530	496	511	482	530
Not stated ..	..	..	..	..	..	..	..	..	2	2
Mean age	**23·87**	**23·38**	**25·1**	**24·3**	**24·5**	**24·3**	**23·7**	**23·7**	**23·5**	**23·5**
Tribal										
0–5	1,562	1,639	1,117	1,243	1,403	1,483	1,219	1,359	803	915
5–10	1,379	1,322	1,524	1,524	1,567	1,535	1,542	1,526	1,074	1,067
10–15	1,139	1,064	1,249	1,124	1,126	1,001	1,271	1,125	801	732
15–20	748	926	789	857	784	925	824	925	532	566
20–40	3,348	3,527	3,309	3,567	3,186	3,379	3,190	3,445	1,936	2,021
40–60	1,531	1,244	1,629	1,368	1,561	1,314	1,634	1,289	953	775
60 and over ..	293	278	383	317	373	363	320	331	224	214
Not stated ..	..	..	..	..	..	..	..	..	3,677	3,710
Mean age	**23·42**	**23·44**	**24·5**	**23·3**	**23·6**	**22·9**	**23·6**	**22·7**	**23·1**	**22·0**
Jain										
0–5	950	1,160	903	1,037	880	1,032	1,007	1,115	1,032	1,119
5–10	946	1,046	858	979	893	1,046	1,014	1,076	969	1,063
10–15	1,024	997	1,035	953	1,084	1,050	1,041	1,003	1,046	963
15–20	1,070	947	978	888	956	837	887	764	899	830
20–40	3,608	3,319	3,492	3,246	3,421	3,122	3,278	3,085	3,373	3,193
40–60	1,843	1,827	2,008	1,999	2,039	1,988	2,029	2,054	1,997	1,956
60 and over ..	559	704	726	898	727	925	744	903	682	874
Not stated ..	..	..	..	..	..	..	..	..	2	2
Mean age	**27·33**	**27·28**	**28·7**	**29·0**	**28·8**	**29·0**	**28·0**	**28·4**	**27·8**	**28·1**

iii.—Age Distribution of 1,000 of each sex in certain communities.

Community.	Males. 0–6.	7–13.	14–16.	17–23.	24–43.	44 and over.	Females. 0–6.	7–13.	14–16.	17–23.	24–43.	44 and over.
Adi-Andhra	204	187	64	98	291	156	203	168	58	129	301	141
Adi-Dravida	211	189	64	104	281	151	214	174	53	128	297	134
Anglo-Indian	169	184	76	146	240	185	156	175	75	153	268	173
Arya Vaisya	157	150	73	131	302	187	159	145	69	147	278	202
Bant	179	187	73	111	282	168	167	173	66	118	290	186
Bavuri	237	185	63	95	276	144	198	155	62	143	305	137
Boya	194	182	69	104	303	148	205	182	60	125	295	133
Brahman, Kanarese ..	175	157	61	122	284	201	176	151	60	135	274	205
Do. Malayalam	149	124	55	137	317	218	175	135	71	142	272	204
Do. Oriya ..	193	168	70	122	281	166	179	143	56	144	292	186
Do. Tamil ..	174	152	58	121	294	201	174	145	54	129	283	215
Do. Telugu ..	160	146	65	129	301	199	163	144	63	134	277	219
Chakkiliya	217	207	62	94	276	144	227	194	51	116	294	118
Chenchu	209	168	69	128	282	144	225	142	76	163	291	103
Cheruman	213	179	70	97	301	140	204	155	63	121	311	146
Dandasi	211	193	78	108	263	147	179	150	71	145	310	145
Golla	180	167	78	116	291	168	184	161	67	131	292	165
Holeya	220	216	70	73	268	153	185	170	53	100	314	178
Kadan	209	79	47	107	423	135	156	134	94	174	308	134
Kalingi	195	156	80	122	278	169	170	157	68	141	288	176
Kalinji	206	171	80	114	258	171	201	146	71	132	288	162
Kallan	182	180	63	109	302	164	171	165	52	123	321	168
Karnam	190	163	102	141	242	162	189	148	96	150	249	168
Kond	183	158	74	114	333	138	188	153	81	142	314	122
Labbai	219	199	57	110	263	152	190	173	61	138	285	153
Madiga	200	183	66	104	297	150	214	174	58	129	297	128
Mala	188	179	68	106	293	166	190	162	57	129	311	151
Maravan	187	180	59	110	284	180	185	174	51	123	299	168
Nayar	184	164	69	123	281	179	169	147	63	126	290	205
Pallan	200	185	57	97	292	169	195	165	47	121	315	157
Panchama	200	179	75	112	274	160	188	169	77	135	285	146
Paraiyan	200	192	63	103	286	156	201	168	53	128	307	143
Razu	172	153	82	143	280	170	162	159	87	157	260	175
Saora	202	163	82	115	293	145	211	158	81	143	282	125
Sengunthar	187	171	63	125	278	176	188	172	57	134	285	164
Telaga	180	170	79	134	281	156	175	162	75	134	283	171
Toda	97	76	68	132	403	224	180	128	39	113	377	163
Valluvan	191	172	68	122	278	169	185	170	61	132	299	153
Vanniyan	195	176	66	111	283	169	201	172	59	132	285	151
Visvabrahman, Tamil	176	171	61	123	291	178	178	166	56	136	298	166
Do. Telugu	174	165	75	130	284	172	172	159	74	144	277	174
Yadava	176	169	64	112	297	182	176	162	53	125	307	177

iv.—Proportion of (a) children under 14 and of persons over 43 to those aged 14–43 in certain communities ; (b) married females aged 14–43 per 100 females.

Community.	Children (both sexes) per 100		Persons over 43 per 100 aged 14–43.		Married females aged 14–43 per 100 females of all ages.
	persons aged 14–43.	married females aged 14–43.	Males.	Females.	
Adi-Andhra	81	189	34	29	40
Adi-Dravida	85	210	34	28	37
Anglo-Indian	71	276	40	35	24
Arya-Vaisya	61	168	37	41	37
Bant	75	192	36	39	36
Bavuri	80	173	33	27	40
Boya	80	214	31	28	36
Brahman, Kanarese	71	176	43	44	37
Do. Malayalam	58	191	43	42	33
Do. Oriya	70	171	35	38	38
Do. Tamil	69	166	43	46	38
Do. Telugu	63	165	40	46	36
Chakkiliyan	95	229	33	26	37
Chenchu	74	191	30	20	40
Cheruman	78	200	30	30	36
Dandasi	73	162	33	28	39
Golla	71	188	35	34	36
Holeya	88	204	37	38	35
Kadan	50	123	23	23	42
Kalingi	69	162	35	35	41
Kalinji	76	153	38	33	39
Kallan	72	187	34	34	36
Karnam	71	196	33	34	36
Kond	64	164	26	23	41
Labbai	85	195	35	32	37
Madiga	81	209	32	26	37
Mala	75	180	36	30	39
Maravan	78	197	40	35	36
Nayar	70	214	38	44	30
Pallan	80	194	38	33	37
Panchama	77	186	35	29	39
Paraiyan	81	195	35	29	38
Razu	64	169	34	35	38
Saora	74	194	30	25	37
Sengunthar	76	194	38	34	37
Telaga	70	183	32	35	37
Toda	40	111	37	31	48
Valluvan	75	191	36	31	37
Vanniyan	79	202	36	32	37
Visvabrahman, Tamil ..	72	191	38	34	36
Do. Telugu ..	68	184	35	35	36
Yadava	71	187	39	36	36

v.—Proportion of (a) children under 10 and of persons over 60 to those aged 15–40 ; (b) married females aged 15–40 per 100 females.

Natural division.	Children (both sexes) per 100 persons aged 15–40. 1931.	1921.	1911.	1901.	1891.	Children (both sexes) per 100 married females aged 15–40. 1931.	1921.	1911.	1901.	1891.	Persons over 60 per 100 aged 15–40. 1931. M.	1931. F.	1921. M.	1921. F.	1911. M.	1911. F.	1901. M.	1901. F.	1891. M.	1891. F.	Married females aged 15–40 per 100 females of all ages. 1931.	1921.	1911.	1901.	1891.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Province ..	***67***	***65***	***68***	***73***	***73***	***162***	***160***	***165***	***179***	***175***	***11***	***11***	***15***	***15***	***15***	***15***	***14***	***15***	***13***	***15***	***33***	***32***	***32***	***31***	***32***
Agency	69	60	70	66	69	160	153	170	161	164	7	7	8	8	8	8	8	8	9	9	37	33	35	36	29
East Coast, North ..	65	67	71	74	75	154	155	165	176	179	12	12	17	18	17	18	15	17	16	18	34	32	32	31	32
Deccan	65	61	63	72	67	172	166	161	189	176	11	11	17	16	17	17	15	17	12	14	32	30	31	29	32
East Coast, Central ..	69	68	69	77	74	168	166	166	187	177	11	10	16	14	15	14	15	15	13	14	33	32	32	30	33
East Coast, South ..	65	64	69	73	73	156	155	162	173	170	12	11	15	16	16	16	15	16	14	16	33	32	32	31	32
West Coast	70	64	63	66	69	177	166	166	177	177	11	11	11	12	10	12	10	12	10	13	31	31	31	30	32

v-a.—Proportion of (a) children under 10 and of persons over 60 to those aged 15–40 ; (b) married females aged 15–40 per 100 females.

Natural division and religion.	Children (both sexes) per 100 persons aged 15–40. 1931.	1921.	1911.	1901.	1891.	Children (both sexes) per 100 married females aged 15–40. 1931.	1921.	1911.	1901.	1891.	Persons over 60 per 100 aged 15–40. 1931. M.	1931. F.	1921. M.	1921. F.	1911. M.	1911. F.	1901. M.	1901. F.	1891. M.	1891. F.	Married females aged 15–40 per 100 females of all ages. 1931.	1921.	1911.	1901.	1891.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Province—																									
Hindu	66	65	68	73	71	161	159	163	178	173	12	11	16	16	15	16	14	16	13	15	33	32	32	31	32
Muslim	73	70	72	77	76	176	170	174	187	181	11	10	14	13	13	14	13	14	13	14	33	32	32	31	33
Christian	69	70	72	79	74	175	176	179	196	179	12	10	16	13	15	13	14	13	12	12	32	31	31	29	33
Tribal	69	63	72	68	76	162	161	177	168	189	7	6	9	7	9	8	8	8	9	8	36	34	34	34	21
Jain	45	44	46	52	50	132	126	128	141	137	12	17	16	22	17	23	18	24	16	22	34	30	32	31	32
Agency—																									
Hindu	68	60	70	67	67	160	152	168	159	159	7	7	9	9	8	9	8	8	9	10	37	33	35	36	34
Muslim	57	53	61	52	52	151	140	150	143	145	6	8	9	11	8	11	7	13	8	16	37	35	36	35	32
Christian	73	74	54	63	78	170	172	134	160	223	6	5	6	6	8	5	6	7	3	5	36	35	35	36	30
Tribal	69	59	70	68	75	160	155	176	170	186	7	6	8	6	8	8	7	7	9	8	36	34	34	35	20
East Coast, North—																									
Hindu	65	66	71	74	75	153	155	182	175	179	12	13	17	18	14	15	15	18	16	18	34	32	32	31	32
Muslim	72	71	73	78	76	174	170	173	165	181	13	13	19	17	18	18	17	18	17	19	33	32	32	35	32
Christian	66	69	71	82	81	158	163	166	194	186	12	10	20	13	18	14	17	14	15	15	36	33	33	31	34
Tribal	74	79	82	73	86	184	180	183	179	210	10	9	16	10	16	12	10	10	12	11	34	34	34	32	31
Deccan—																									
Hindu	64	60	61	71	66	170	165	159	188	175	11	11	17	17	17	17	15	17	12	15	32	30	31	28	32
Muslim	74	68	72	81	74	183	173	175	197	181	11	10	17	16	18	17	17	17	13	15	33	32	32	30	34
Christian	71	68	68	79	70	175	172	169	199	178	10	8	17	14	20	15	15	14	12	13	34	32	31	29	34
East Coast, Central—																									
Hindu	69	68	69	77	73	167	163	166	187	173	12	11	16	14	15	15	15	15	13	14	33	33	32	30	33
Muslim	72	70	76	81	66	180	171	178	187	177	11	9	15	13	16	14	16	15	16	16	34	33	33	32	33
Christian	68	70	72	82	77	188	219	190	218	201	9	8	13	11	13	11	13	13	12	12	31	26	29	27	30
Jain	46	43	52	54	51	125	109	126	134	131	14	18	24	26	26	30	23	27	20	26	35	32	31	31	31
East Coast, South—																									
Hindu	64	64	68	72	72	155	154	161	173	170	12	11	15	16	16	16	15	17	14	16	33	32	32	31	32
Muslim	72	72	78	82	80	154	156	163	169	168	12	11	15	15	16	17	17	17	17	18	34	33	33	32	32
Christian	70	69	74	79	80	174	175	178	190	188	12	10	15	14	15	14	14	14	14	14	31	30	31	30	31
West Coast—																									
Hindu	68	61	52	64	67	173	160	139	171	172	11	12	11	13	10	12	10	13	10	13	31	31	31	30	32
Muslim	73	68	70	73	76	184	176	181	192	179	9	9	10	11	9	10	9	10	9	11	32	31	32	30	35
Christian	75	71	68	55	77	207	193	188	148	199	13	11	14	13	11	12	11	11	10	12	28	28	29	29	30
Jain	50	54	45	56	52	140	156	130	153	145	13	16	14	19	13	17	15	20	14	17	32	30	31	31	32

vi.—Percentage Variation in population by age.

Natural division.	Period.	All ages.	0–10.	10–15.	15–40.	40–60.	60 and over.
Province ..	***1921–1931***	***+ 10·3***	***+ 16·7***	***+ 7·4***	***+ 14·3***	***+ 2·3***	***– 15·6***
	1911–1921	***+ 2·2***	***– 0·8***	***+ 5·5***	***+ 3·5***	***+ 0·8***	***+ 4·6***
	1901–1911	***+ 8·4***	***+ 3·9***	***+ 2·7***	***+ 11·8***	***+ 10·2***	***+ 14·7***
Agency	1921–1931	+ 17·9	+ 35·2	– 5·3	+ 18·6	+ 12·3	– 3·1
	1911–1921	– 5·1	– 17·2	+ 19·3	– 3·4	– 4·1	– 1·6
	1901–1911	+ 18·4	+ 23·8	+ 11·1	+ 16·8	+ 18·5	+ 19·3
East Coast, North	1921–1931	+ 12·0	+ 17·7	+ 3·7	+ 20·1	+ 2·9	– 17·1
	1911–1921	+ 3·4	– 1·6	+ 7·0	+ 4·7	+ 4·3	+ 7·4
	1901–1911	+ 9·9	+ 7·3	+ 6·5	+ 11·6	+ 10·0	+ 17·8
Deccan	1921–1931	+ 10·3	+ 22·1	+ 3·4	+ 15·0	+0·046	– 23·9
	1911–1921	– 3·8	– 3·3	– 1·5	– 1·0	– 12·6	– 2·8
	1901–1911	– 3·2	– 10·6	– 10·8	+ 2·8	– 2·9	+ 8·2
East Coast, Central ..	1921–1931	+ 11·3	+ 16·6	+ 13·1	+ 14·9	+ 2·1	– 14·1
	1911–1921	+ 5·5	+ 5·2	+ 5·3	+ 7·0	+ 2·0	+ 8·2
	1901–1911	+ 5·4	– 1·7	– 0·7	+ 10·5	+ 9·0	+ 11·6
East Coast, South	1921–1931	+ 4·7	+ 9·1	+ 6·0	+ 8·3	– 1·7	– 19·6
	1911–1921	+ 0·2	– 4·4	+ 5·3	+ 27·6	– 0·5	– 0·4
	1901–1911	+ 1·5	+ 10·3	+ 10·2	+ 17·0	+ 17·0	+ 19·3
West Coast	1921–1931	+ 13·5	+ 21·4	+ 13·2	+ 10·7	+ 10·8	+ 3·0
	1911–1921	+ 3·3	+ 2·9	+ 4·0	+ 1·3	+ 7·2	+ 9·9
	1901–1911	+ 7·1	+ 4·5	– 0·7	+ 10·6	+ 8·9	+ 8·0

Note.—The percentages are based on variations in unadjusted figures for previous censuses.

vii.—Birthrate by sex and natural division

(*a*) Crude.

Births per thousand of the total population (Census of 1921).

Year.	Province.			Agency.			East Coast, North.			Deccan.			East Coast, Central.			East Coast, South.			West Coast.		
	P.	M.	F.	P.	M.	F.	P.	M.	F.	P.	M.	F.	P.	M.	F.	P.	M.	F.	P.	M.	F.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1921 ..	**27·0**	13·8	13·2	**26·1**	13·3	12·8	**26·3**	13·5	12·8	**28·6**	14·5	14·1	**26·6**	13·6	13·0	**25 0**	12·8	12·2	**33·6**	17·2	16·4
1922 ..	**30·0**	15·3	14·7	**20·1**	10·6	9·5	**31·0**	15·9	15·1	**29·7**	15·1	14·6	**29·0**	14·8	14·2	**27·8**	14·2	13·6	**36·1**	18·5	17·6
1923 ..	**33·1**	16·9	16·2	**29·6**	15·2	14·4	**34·7**	17·7	17·0	**35·6**	18·0	17·6	**32·3**	16·5	15·8	**29·7**	15·2	14·5	**37·6**	19·2	18·4
1924 ..	**34·9**	17·8	17·1	**32·5**	16·8	15·7	**38·0**	19·4	18·6	**37·5**	19·0	18·5	**33·8**	17·2	16·6	**30·6**	15·7	14·9	**38·2**	19·5	18·7
1925 ..	**33·7**	17·2	16·5	**39·9**	20·4	19·5	**36·8**	18·8	18·0	**37·8**	19·2	18·6	**33·2**	16 9	16·3	**29·8**	15·2	14·6	**32·7**	16·7	16·0
1926 ..	**36·1**	18·4	17·7	**35·9**	18·8	17·1	**37·1**	18·9	18·2	**41·5**	21·0	20·5	**37·1**	18·9	18·2	**29·9**	15·2	14·7	**40·5**	20·7	19·8
1927 ..	**36·5**	18·6	17·9	*	..	..	**39·4**	20·2	19·2	**42·8**	21·7	21·1	**37·3**	19·0	18·3	**30·5**	15·6	14·9	**36·8**	18·8	18·0
1928 ..	**37·4**	19·1	18·3	*	..	..	**40·1**	20·5	19·6	**39·5**	20·1	19·4	**36·2**	18·5	17·7	**34·1**	17·4	16·7	**41·8**	21·3	20·5
1929 ..	**38·0**	19·4	18·6	*	..	..	**40·3**	20·6	19·7	**38·9**	19·8	19·1	**37·8**	19·3	18·5	**33·9**	17·3	16·6	**42·5**	21·7	20·8
1930 ..	**39·8**	20·4	19·1	*	..	..	**43·3**	22·2	21·1	**43·3**	22·1	21·2	**39·4**	20·2	19·2	**34·2**	17·5	16·7	**44·2**	22·6	21·6

* Separate figures for Agency not available.

(*b*) Corrected.

Year.	Province.			Agency.			East Coast, North.			Deccan.			East Coast, Central.			East Coast, South.			West Coast.		
	P.	M.	F.	P.	M.	F.	P.	M.	F.	P.	M.	F.	P.	M.	F.	P.	M.	F.	P.	M.	F.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1921 ..	27·0	13·8	13·2	24·1	12·3	11·8	26·3	13 5	12·8	28·6	14·5	14 1	26·6	13·6	13·0	25·0	12 8	12·2	33·6	17·2	16·4
1922 ..	29·8	15·2	14 6	17·9	9·4	8 5	30·7	15·7	15 0	29·4	14 9	14·5	28 8	14·7	14·1	27·6	14·1	13·5	35 6	18 2	17·4
1923 ..	32·5	16·6	15 9	25·3	13·0	12·3	33·9	17·3	16·6	34·8	17·6	17·2	31·6	16·1	15·5	28·4	14 5	13 9	36·7	18·7	18·0
1924 ..	34·1	17·4	16·7	26·9	13 9	13·0	36 7	18·7	18 0	36·4	18 4	18 0	32·7	16·6	16·1	30·1	15·4	14 7	36·8	18·8	18·0
1925 ..	32·4	16 5	15·9	32·0	16 4	15·6	35·2	18·0	17·2	36·4	18 5	17·9	31·8	16·2	15·6	29·1	14·8	14·3	31·1	15 9	15·2
1926 ..	34·4	17·5	16·9	27·8	14·6	13·2	35·1	17 9	17·2	39·5	20·0	19 5	35 1	17·9	17·2	29 1	14·8	14·3	38 0	19·4	18·6
1927 ..	34·4	17·5	16·9	..	..	..	36 0	18·5	17·5	40·4	20·5	19 9	35·0	17·8	17·2	29·7	15 2	14 5	34·1	17·4	16·7
1928 ..	34·9	17·8	17·1	..	..	..	36·2	18·5	17·7	36·9	18·8	18 1	33 6	17 2	16·4	32·9	16 8	16·1	38·2	19·5	18·7
1929 ..	35·1	17·9	17·2	..	..	..	36 0	18·4	17·6	36·0	18·3	17·7	34·7	17·7	17 0	32·5	16·6	15·9	38·3	19·6	18·7
1930 ..	36·4	18·7	17·7	..	..	..	38·1	19·5	18·6	39 6	20·2	19 4	35·8	18·4	17·4	32 6	16·7	15·9	39·5	20·2	19·3

Note.—Based on intercensal (1921–31) population figures calculated by geometric progression.

viii.—Deathrate by sex and natural division.

(*a*) Crude.

Deaths per thousand of the total population (Census of 1921).

Year.	Province.			Agency.			East Coast, North.			Deccan.			East Coast, Central.			East Coast, South.			West Coast.		
	P.	M.	F.	P.	M.	F.	P.	M.	F.	P.	M.	F.	P.	M.	F.	P.	M.	F.	P.	M.	F.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1921 ..	**20·2**	10·2	10·0	**26·2**	13·2	13·0	**22·6**	11·4	11·2	**19·2**	9·8	9·4	**18·4**	9·4	9·0	**19·8**	9·9	9·9	**20·1**	10·3	9·8
1922 ..	**21·0**	10·7	10·3	**18·7**	9·6	9·1	**21·7**	11·2	10·5	**21·8**	11·2	10·6	**19·6**	10·0	9·6	**20·7**	10·3	10·4	**22·8**	11·5	11·3
1923 ..	**22·2**	11·2	11·0	**18·4**	9·7	8·7	**22·9**	11·7	11·2	**23·7**	12·0	11·7	**21·5**	10·8	10·7	**21·7**	10·8	10·9	**22·2**	11·2	11·0
1924 ..	**24·6**	12·5	12·1	**22·7**	11·7	11·0	**24·4**	12·4	12·0	**28·3**	14·4	13 9	**24·7**	12·6	12·1	**22·7**	11·5	11·2	**25·5**	12·8	12·7
1925 ..	**24·4**	12·4	12·0	**26·4**	13·8	12·6	**25·1**	12·7	12·4	**24·9**	12·7	12·2	**24·3**	12·4	11·9	**23·9**	12·1	11·8	**23·7**	11·9	11·8
1926 ..	**25·5**	12·9	12·6	**24·8**	12·9	11·9	**26·8**	13·7	13·1	**28 7**	14·5	14·2	**24·6**	12·4	12·2	**23·1**	11·6	11·5	**28·2**	14·2	14·0
1927 ..	**24·3**	12·3	12·0	*	..	..	**26·8**	13·6	13·2	**26·9**	13·7	13·2	**22·6**	11·5	11·1	**23·2**	11·7	11·5	**24·2**	12·3	11·9
1928 ..	**26·4**	13·4	13·0	*	..	..	**28·6**	14·6	14·0	**34·3**	17·3	17·0	**24·9**	12·7	12·2	**24·3**	12·3	12·0	**24·2**	12·4	11·8
1929 ..	**25·3**	12·9	12·4	*	..	..	**26·4**	13·5	12·9	**30·5**	15·5	15·0	**23·6**	12·0	11·6	**26·0**	13·1	12·9	**23·0**	11·7	11·3
1930 ..	**25·5**	12·9	12·6	*	..	..	**26·3**	13·3	13·0	**30·9**	15·7	15·2	**25·0**	12·7	12·3	**24·4**	12·2	12·2	**24·1**	12·1	12·0

* Separate figures for Agency not available.

viii.—Deathrate by sex and natural division—cont.

(*b*) Corrected.

Year.	Province. P.	Province. M.	Province. F.	Agency. P.	Agency. M.	Agency. F.	East Coast, North. P.	East Coast, North. M.	East Coast, North. F.	Deccan. P.	Deccan. M.	Deccan. F.	East Coast, Central. P.	East Coast, Central. M.	East Coast, Central. F.	East Coast, South. P.	East Coast, South. M.	East Coast, South. F.	West Coast. P.	West Coast. M.	West Coast. F.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1921 ..	20·2	10·2	10·0	24·1	12·1	12·0	22·6	11·4	11·2	19·2	9·8	9·4	18·4	9·4	9·0	19·8	9·9	9·9	20·1	10·3	9·8
1922 ..	20·8	10·6	10·2	16·6	8·5	8·1	21·4	11·0	10·4	21·7	11·1	10·6	19·4	9·9	9·5	20·6	10·3	10·3	22·6	11·4	11·2
1923 ..	21·7	10·9	10·8	15·7	8·3	7·4	22·5	11·5	11·0	23·2	11·7	11·5	21·0	10·5	10·5	21·4	10·7	10·7	21·7	10·9	10·8
1924 ..	23·8	12·1	11·7	18·7	9·6	9·1	23·6	12·0	11·6	27·4	13·9	13·5	23·9	12·2	11·7	22·4	11·3	11·1	24·6	12·3	12·3
1925 ..	23·5	11·9	11·6	21·2	11·1	10·1	24·0	12·1	11·9	23·9	12·2	11·7	23·3	11·9	11·4	23·4	11·8	11·6	22·4	11·2	11·2
1926 ..	24·3	12·3	12·0	19·2	10·0	9·2	25·4	13·0	12·4	27·3	13·8	13·5	23·3	11·7	11·6	22·6	11·3	11·3	26·4	13·3	13·1
1927 ..	22·9	11·6	11·3	..	..	..	24·5	12·4	12·1	25·4	12·9	12·5	21·2	10·8	10·4	22·6	11·4	11·2	22·4	11·4	11·0
1928 ..	24·6	12·5	12·1	..	..	..	25·8	13·2	12·6	32·0	16·1	15·9	23·1	11·8	11·3	23·4	11·8	11·6	22·1	11·3	10·8
1929 ..	23·4	11·9	11·5	..	..	..	23·5	12·0	11·5	28·2	14·3	13·9	21·6	11·0	10·6	24·9	12·5	12·4	20·8	10·6	10·2
1930 ..	23·3	11·8	11·5	..	..	..	23·2	11·7	11·5	28·3	14·4	13·9	22·7	11·5	11·2	23·4	11·7	11·7	21·5	10·8	10·7

Note.—Based on intercensal (1921–31) population figures calculated by geometric progression.

ix.—Deathrate by sex and age.

(*a*) Crude.

Age.	Average of decade. M.	Average of decade. F.	1921. M.	1921. F.	1922. M.	1922. F.	1923. M.	1923. F.	1924. M.	1924. F.	1925. M.	1925. F.	1926. M.	1926. F.	1927. M.	1927. F.	1928. M.	1928. F.	1929. M.	1929. F.	1930. M.	1930. F.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
All ages ..	**24·6**	**23·3**	**20·7**	**19·6**	**21·6**	**20·3**	**22·7**	**21·6**	**25·3**	**23·8**	**25·1**	**23·7**	**26·2**	**24·9**	**25·0**	**23·6**	**27·2**	**25·5**	**26·1**	**24·5**	**26·1**	**24·9**
Under 1 year ..	226·8	194·0	181·2	151·2	207·4	174·4	237·8	201·9	258·8	219·1	253·0	213·1	282·1	240·7	266·3	222·7	195·5	172·8	190·3	169·4	195·9	174·9
1–5 ..	38·6	36·6	30·3	28·4	31·7	29·5	34·8	32·7	40·3	37·8	40·3	38·3	44·1	41·9	37·9	35·8	42·6	40·6	43·1	41·0	41·2	39·5
5–10 ..	9·0	8·5	8·6	8·2	8·5	7·9	8·3	8·0	10·2	9·6	9·7	9·1	9·5	8·9	8·8	8·1	9·5	9·2	8·8	8·5	8·2	7·9
10–15 ..	5·7	5·8	5·9	6·1	5·8	6·1	5·5	5·7	6·6	6·5	6·0	6·0	5·7	5·6	5·5	5·7	6·0	6·0	5·2	5·4	4·6	4·8
15–20 ..	8·3	11·6	8·2	10·7	8·4	10·9	7·8	11·0	9·1	12·2	8·5	11·4	8·2	11·8	8·2	11·6	8·8	12·8	8·0	11·6	8·1	12·2
20–30 ..	10·0	11·6	9·2	10·2	9·4	10·4	9·2	10·8	10·3	11·7	10·5	11·6	10·2	12·0	10·2	11·8	11·2	13·4	10·1	12·0	9·8	12·1
30–40 ..	12·4	12·3	10·7	10·8	11·3	11·4	11·2	11·5	12·7	12·4	12·9	12·5	12·7	12·6	12·9	12·7	14·2	14·1	12·8	12·6	12·3	12·7
40–50 ..	17·1	14·4	6·2	13·2	11·5	13·4	16·6	13·4	18·0	14·5	18·5	14·6	18·6	14·5	18·7	14·9	20·6	15·7	18·7	14·7	23·1	14·7
50–60 ..	28·3	24·0	25·9	21·9	26·5	22·2	27·0	22·8	29·2	24·8	28·7	24·6	29·4	24·8	29·1	25·0	30·5	25·5	28·9	24·1	28·1	24·0
60 and over.	72·5	71·6	66·7	66·3	64·9	63·0	67·0	66·7	72·1	71·2	74·1	73·8	75·4	75·4	74·0	73·8	78·5	76·0	76·3	74·3	75·6	75·4

Note.—Calculated on the total population including European and Anglo-Indians, though the statistics are exclusive of them and born dead cases.

(*b*) Corrected.

Age.	Average of decade. M.	Average of decade. F.	1921. M.	1921. F.	1922. M.	1922. F.	1923. M.	1923. F.	1924. M.	1924. F.	1925. M.	1925. F.	1926. M.	1926. F.	1927. M.	1927. F.	1928. M.	1928. F.	1929. M.	1929. F.	1930. M.	1930. F.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
All ages ..	23·5	22·2	20·7	19·6	21·4	20·1	22·3	21·2	24·5	23·1	24·1	22·8	24·9	23·8	23·6	22·3	25·3	23·4	24·1	22·7	23·9	22·8
Under 1 year.	230·6	200·0	182·8	152·4	206·0	172·8	232·3	196·6	248·7	209·7	239·3	200·5	262·5	222·6	243·8	202·4	259·7	213·1	252·3	208·4	269·0	221·4
1–5 ..	33·1	32·3	30·4	28·5	30·9	28·9	32·9	31·1	34·4	34·0	34·5	36·0	36·7	36·7	31·9	30·5	33·5	33·6	34·2	33·0	31·8	31·0
5–10 ..	8·7	8·4	8·5	8·2	8·4	8·0	8·1	7·9	9·9	9·5	9·4	9·0	9·1	8·8	8·4	8·0	9·0	9·0	8·3	8·3	7·8	7·7
10–15 ..	5·5	5·5	5·9	6·0	5·8	6·0	5·5	5·6	6·5	6·3	5·8	5·7	5·5	5·4	5·3	5·3	5·7	5·6	5·0	5·0	4·4	4·4
15–20 ..	7·9	10·4	8·2	10·7	8·3	10·7	7·6	10·4	8·8	11·3	8·1	10·4	7·7	10·4	7·7	10·0	8·2	10·8	7·3	9·6	7·3	9·8
20–30 ..	9·4	10·9	9·2	10·1	9·3	10·2	8·9	10·5	9·9	11·2	9·9	11·0	9·5	11·3	9·4	10·8	10·1	12·2	9·0	10·7	8·6	10·3
30–40 ..	11·7	11·7	10·6	10·4	11·1	11·2	10·9	11·2	12·2	12·0	12·3	12·0	12·0	12·0	12·1	12·0	13·2	13·1	11·8	11·7	11·2	11·6
40–50 ..	17·8	14·2	16·2	13·2	16·3	13·4	16·3	13·3	17·5	14·4	17·8	14·4	17·7	14·3	17·7	14·7	19·3	15·4	17·4	14·4	21·4	14·3
50–60 ..	29·1	24·6	27·3	22·1	26·8	22·5	27·4	23·2	29·7	25·3	29·3	25·2	30·1	25·5	29·8	25·7	31·4	26·3	29·8	25·0	29·1	25·0
60 and over.	79·3	79·1	67·7	67·3	67·0	65·4	70·2	70·2	76·8	76·2	80·1	80·4	82·9	83·6	82·7	83·3	89·1	87·3	87·4	87·0	88·6	89·8

Note.—1. Calculated on the total population including Europeans and Anglo-Indians, though the statistics are exclusive of them and born dead cases.
2. Based on intercensal (1921–31) population figures calculated by geometric progression.

x.—*Deaths from certain diseases per* 1,000 *of each sex.*

Year.		Province. Deaths. P.	Province. Deaths. M.	Province. Deaths. F.	Rate per 1,000 of each sex. M.	Rate per 1,000 of each sex. F.	Natural divisions. Agency. M.	Agency. F.	East Coast, North. M.	East Coast, North. F.	Deccan. M.	Deccan. F.	East Coast, Central. M.	East Coast, Central. F.	East Coast, South. M.	East Coast, South. F.	West Coast. M.	West Coast. F.
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Cholera.	1921	27,064	14,187	12,877	0·7	0 6	206	179	6,106	5,845	84	62	1,914	1,653	4,616	4,042	1,261	1,096
	1922	16,502	8,767	7,735	0 4	0·4	4	5	1,886	1,800	4,899	4.161	737	697	1.171	1,002	70	70
	1923	5,169	2,723	2,446	0·1	0·1	1	5	361	327	506	425	1,385	1.299	385	300	85	90
	1924	51,971	27,652	24,319	1·4	1 2	..	1	538	533	4,941	4.104	11.211	9.693	10,193	9 044	769	944
	1925	44,815	23,613	21,202	1·2	1·0	1	2	115	107	8	2	7,148	6,122	15,705	14.213	636	756
	1926	24,407	13.040	11.367	0 6	0 5	3	1	255	224	44	35	4,299	3.525	8.116	7.232	323	350
	1927	35.334	19,004	16.330	0·9	0 8	* ..	..	4,743	3,967	1,885	1,642	4.312	3,575	7,787	6,858	277	288
	1928	57,677	30.345	27,332	1 5	1·3	* ..	..	8,387	7,329	5,827	5.308	8,876	8.119	6.969	6,361	286	215
	1929	25,846	13,561	12.285	0·7	0·6	* ..	..	677	610	282	226	3,488	2,854	8,967	8,458	147	137
	1930	18,746	9,819	8,927	0 5	0·4	* ..	..	1,030	931	4,815	4,430	1,500	1,340	2,301	1,982	173	244
Smallpox.	1921	9,792	5,072	4,720	0·3	0 2	38	35	1,229	1,208	1,041	941	1,436	1,285	998	915	330	336
	1922	22,801	11,651	11,150	0·6	0·5	6	4	1,783	1,570	974	966	4,148	3 923	3,891	3,887	849	800
	1923	24,434	12,302	12,132	0·6	0·6	21	19	2,579	2,417	1,099	1.104	3,952	3,759	2.663	2,662	1,988	2.171
	1924	18,810	9,626	9,184	0 5	0·4	24	12	2.909	2,684	1.268	1,335	3.510	3.311	1,215	1.130	700	712
	1925	20.478	10,460	10,018	0 5	0·5	74	49	3,906	3.843	1.501	1,446	3.664	3,436	1,045	998	270	246
	1926	10,957	5,659	5.298	0 3	0·3	22	15	1,588	1,493	674	629	1,715	1,608	1.512	1,422	148	131
	1927	7,781	4.058	3.723	0 2	0·2	* ..	..	1,318	1,270	313	290	1,124	965	1,112	1,010	191	188
	1928	7,615	3,861	3,754	0·2	0·2	* ..	..	1,050	1,029	369	364	1,215	1,132	895	884	332	345
	1928	9,708	4,894	4,814	0·2	0 2	* ..	..	842	789	114	140	2,222	2.123	857	889	859	873
	1930	8,025	4,022	4,003	0·2	0·2	* ..	..	815	852	274	292	1,637	1,463	641	700	655	696
Fevers.	1921	316,019	158,490	157,529	7·8	7·6	1,760	1,821	75,044	75 473	16,102	15,273	26,218	25,198	22,893	23,423	16,473	16,341
	1922	319,688	162,250	157,438	8·0	7·6	1,474	1,444	75,041	70,915	14,577	14,156	27,730	26,556	24,832	25,418	18,596	18,949
	1923	318,172	160,359	157,813	7·9	7·6	1,568	1,449	73,886	71,698	18,174	17,594	27,821	27,995	21,688	21,780	17,222	17,297
	1924	322,356	161,749	160,607	8·0	7·7	1,882	1,787	73.909	72,926	18,494	18,105	28,799	28,609	18.426	18,485	20,239	20,695
	1925	316,406	158,547	157,859	7·8	7·6	2 225	2,059	71,678	71,711	18,457	17.906	29,398	28,872	17,744	17,931	19,045	19,380
	1926	337,945	170,032	167,913	8·4	8·1	2,180	1,955	77,831	75,684	20,885	20,977	29,616	29,849	17,835	17,912	21,685	21,536
	1927	321,995	162,227	159,768	8 0	7·7	* ..	..	76,312	74,992	18,385	17,822	28,866	29,017	18,786	18,684	19,878	19,253
	1928	344,683	174,606	170,077	8·6	8·2	* ..	..	77,477	75,220	24,751	24,205	31,988	31,410	20,818	20,538	19,572	18,704
	1929	339,052	172,007	167,045	8·5	8·0	* ..	..	76,636	73,877	23,192	22,217	31,367	30,661	22,958	22,817	17,854	17,473
	1930	330,500	165,775	164,725	8·2	7·9	* ..	..	71,214	70,715	19,508	19,293	35,058	34,973	22,173	22,087	17,822	17,657
Dysentery and Diarrhœa.	1921	53,621	27,754	25,867	1·4	1·2	159	140	5,256	4,698	1,336	1,284	10,900	10,211	5,368	5,092	4,735	4,442
	1922	51,805	26,619	25,186	1·3	1·2	115	112	3,696	3,242	1,518	1,361	10,419	9.906	4.900	4.751	5,971	5,814
	1923	60,323	30,822	29,501	1 5	1·4	52	48	4.309	3,763	1,844	1,760	12,581	12,239	6,796	6.603	5,240	5,088
	1924	74,941	38,501	36,440	1·9	1·8	89	83	5,311	4.623	2,513	2,349	15,221	14,508	8,841	8,350	6,526	6,527
	1925	78,935	40,524	38,411	2 0	1·8	82	92	6,113	5,620	2,041	1,827	16,587	15,783	10,027	9,514	5,674	5,575
	1926	91,758	47,131	44,627	2 3	2·1	69	75	7,150	6,407	2,826	2,552	17,517	16,929	10,579	10,056	8,990	8,608
	1927	72,707	37,198	35,509	1·8	1·7	* ..	..	6.354	5.979	2,502	2.308	13,859	13.364	9,028	8.396	5.455	5.462
	1928	76,836	39,247	37,589	1·9	1·8	* ..	..	6,649	6,188	2,948	2,800	15,692	15,051	8,534	8,380	5,424	5,170
	1929	75,588	38,518	37,069	1·9	1·8	* ..	..	6,460	5,771	3,502	3.176	14,910	14,685	9.578	9,210	4,068	4.227
	1930	76,815	39,132	37,683	1·9	1·8	* ..	..	6,498	6,012	2,903	2,702	15,967	15,280	9,110	8,865	4,654	4,824
Plague.	1921	11,875	5,801	6,074	0·3	0·3	..	..	3	16	316	311	4.159	4,221	1,271	1,497	52	29
	1922	9,193	4,493	4.700	0 2	0·2	..	..	..	..	470	487	3,073	3,057	792	1,017	158	139
	1923	12,110	5,758	6,352	0·3	0·3	..	1	2	2	529	568	2,827	2,888	2,286	2,826	114	67
	1924	3,922	1,830	2,092	0·1	0·1	..	..	4	2	78	96	1,095	1.158	624	816	29	20
	1925	2,014	979	1,035	0·1	0·1	..	..	2	..	90	115	651	645	173	218	63	57
	1926	2,142	1.024	1,118	0·05	0·05	..	..	5	6	360	338	437	526	186	219	36	29
	1927	2,457	1,154	1,303	0·1	0·1	* ..	..	..	1	638	660	100	144	362	466	54	32
	1928	2,106	966	1,140	0·05	0·05	* ..	..	2	..	381	363	199	239	319	477	65	61
	1929	1,801	853	948	0 04	0·04	* ..	..	..	..	359	338	297	310	176	285	21	15
	1930	1,459	702	757	0·03	0·04	* ..	..	1	..	198	150	167	165	332	439	4	3

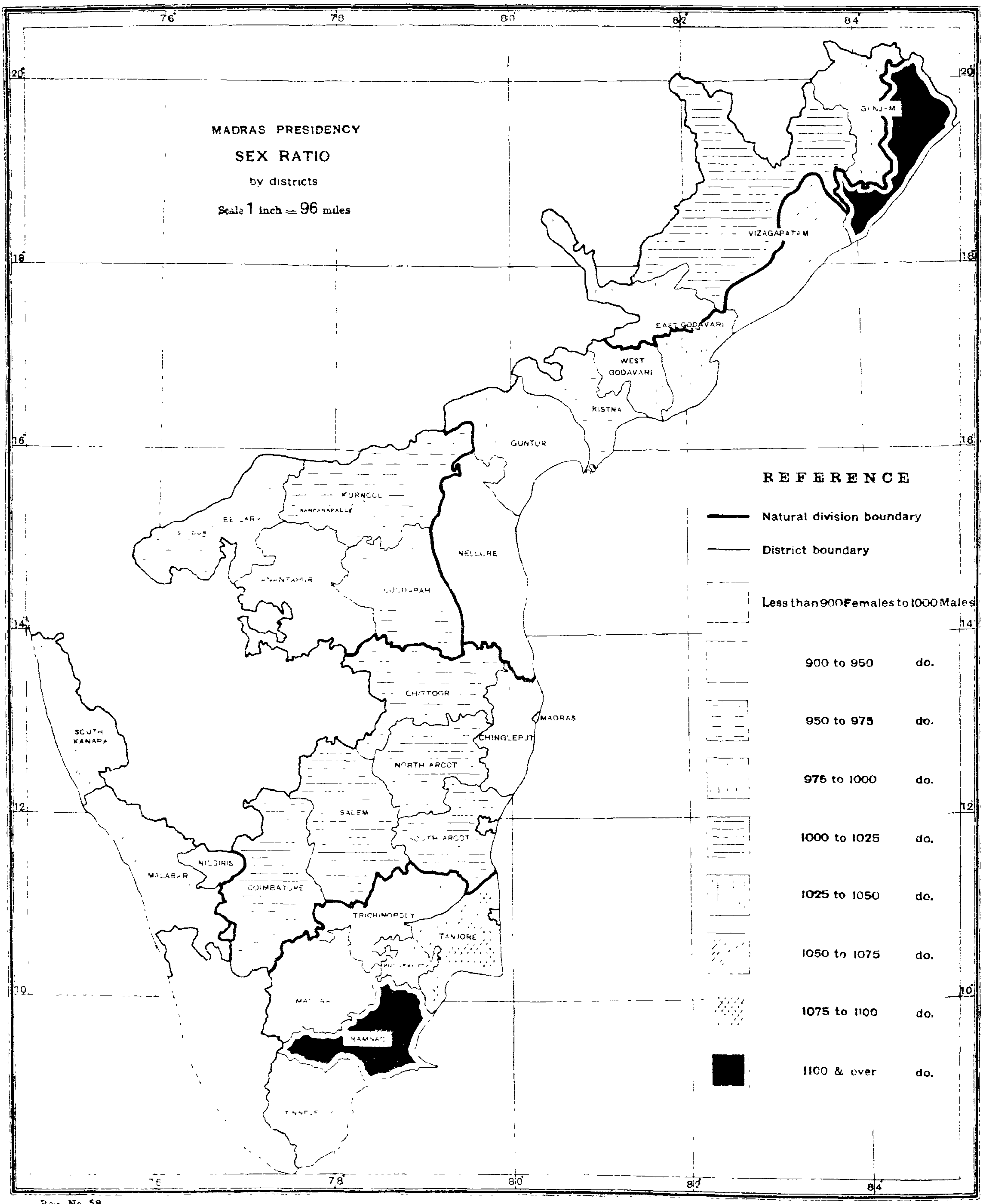
* Separate Agency figures not available.

Actual Ages returned by 50,000 of each sex in Madras City—1931.

Age.	M.	F.	Age.	M.	F.	Age.	M.	F.	Age.	M.	F.
0	385	373	26	617	531	51	72	44	76	16	2
1	1,019	1,135	27	483	443	52	189	157	77	9	2
2	953	1,077	28	824	1,050	53	99	59	78	10	6
3	1,171	1,301	29	271	213	54	100	63	79	3	..
4	1,015	980	30	3,199	3,411	55	698	702	80	85	86
5	1,316	1,214	31	218	171	56	119	117	81	2	1
6	1,004	955	32	750	629	57	60	40	82	6	1
7	1,121	1,056	33	279	184	58	93	86	83	2	..
8	1,244	1,271	34	217	180	59	34	22	84	2	1
9	717	907	35	2,875	2,333	60	1,036	1,069	85	22	15
10	1,554	1,342	36	374	275	61	42	31	86	5	..
11	463	662	37	256	180	62	89	75	87	3	1
12	1,485	1,172	38	537	423	63	48	34	88	3	..
13	683	698	39	171	124	64	57	37	89		
14	722	826	40	3,179	2,813	65	303	317	90	9	9
15	1,057	1,278	41	159	86	66	26	13	91	..	..
16	844	1,067	42	469	356	67	31	19	92	..	2
17	526	643	43	190	134	68	40	22	93	1	..
18	1,318	1,827	44	107	88	69	12	10	94	..	1
19	595	604	45	1,792	1,557	70	292	280	95	1	2
20	2,031	2,686	46	187	127	71	11	10	96	..	1
21	481	434	47	139	105	72	21	12	97	..	..
22	1,230	1,415	48	305	226	73	10	11	98	..	..
23	665	549	49	89	52	74	5	5	99	..	..
24	522	532	50	1,872	1,791	75	88	71	100	1	2
25	2,565	3,076									

Actual Ages returned by 50,000 of each sex in Chingleput District—1931.

Age.	M.	F.	Age.	M.	F.	Age.	M.	F.	Age.	M.	F.
0	734	738	26	364	394	51	61	48	76	27	8
1	1,400	1,593	27	349	401	52	220	174	77	6	1
2	1,524	1,563	28	605	653	53	75	41	78	17	2
3	1,586	1,758	29	199	168	54	112	80	79	10	2
4	1,510	1,554	30	2,218	2,971	55	876	645	80	172	137
5	1,565	1,762	31	129	132	56	114	103	81	6	6
6	1,338	1,561	32	564	524	57	86	59	82	7	6
7	1,229	1,314	33	161	112	58	153	71	83	6	..
8	1,734	1,844	34	154	130	59	43	40	84	4	..
9	772	795	35	2,119	2,053	60	1,312	1,261	85	37	29
10	2,177	2,305	36	270	227	61	46	34	86	7	1
11	379	363	37	260	210	62	152	88	87	4	
12	1,821	1,727	38	488	340	63	47	38	88	4	4
13	539	522	39	167	135	64	113	31	89	1	..
14	804	686	40	2,269	2,372	65	487	419	90	17	12
15	1,727	1,267	41	88	63	66	41	25	91	..	..
16	919	812	42	439	297	67	37	87	92	1	1
17	534	468	43	118	95	68	54	51	93	1	..
18	1,481	1,330	44	97	63	69	21	12	94	..	..
19	352	322	45	1,603	1,416	70	542	511	95	1	1
20	1,869	2,308	46	155	128	71	9	17	96	..	3
21	246	248	47	179	114	72	45	27	97	..	1
22	899	820	48	282	230	73	16	4	98	..	..
23	347	290	49	74	72	74	15	8	99	..	..
24	367	411	50	1,600	1,647	75	178	141	100	1	2
25	2,012	2,461									



Reg. No 58
Copies 1150

Helio-zinco., Survey Office, Madras.
1932.

CHAPTER V.

SEX.

All census tables observe a sex separation and thus the sex incidence of the various circumstances dealt with in the tables is a matter of ready discovery. Subsidiary Tables *i–iii* at the end of this chapter illustrate by ratios and natural division the matter inherent in the Imperial Tables. Subsidiary Table *iv* shows the sex distribution of the communities selected for treatment in the caste table while *v* and *vi* give actual births and deaths reported by sexes during the past three decades. A good deal of the discussion and illustration in Chapter IV has a bearing on sex distribution.

General.

2. The map shows the distribution of the sexes by districts and illustrates the figures in Subsidiary Table *i*. A comparison with the 1921 map will show at a glance that the Nilgiris and Anantapur continue to have the lowest proportion of females. The belt of female minority in the centre of the presidency shows an extension in the north-east where Kistna district now appears with less than 1,000 females per 1,000 males. The 1921 Kistna district covered the present West Godavari and Kistna and the condition now exposed in the western part of the composite territory existed also in 1921 but was masked by the female predominance in the eastern. Figures for the present district were worked out for past censuses and these illustrate this fact, for West Godavari is shown to have had a regular excess of 30 females per 1,000 males and Kistna an equally constant deficit of 20–25. The 1921 map made no distinction in district agencies nor did the subsidiary table show separate figures. These have been extracted this year and the map indicates that the two northern agencies have an excess of females and only the East Godavari Agency shows a deficiency.

The general tendency is for the proportion of females at this census to be less than it was in 1921. This may reflect to some extent the more normal conditions obtaining now than obtained after the war and the dislocation it caused. The districts where the female proportion has increased are widely separated. They are Nellore, Bellary, Anantapur, Tanjore, Trichinopoly, Pudukkottai, Ramnad, Tinnevelly, Malabar and South Kanara. The increase in Anantapur, Ramnad, Malabar and Trichinopoly is slight. In Nellore and South Kanara it is 10. The Pudukkottai figure however is 14, while the change in Tinnevelly attains the considerable dimensions of 21.

Region of female defect.

3. The female deficiency belt represented by the Deccan remains unchanged and the causes for this continue obscure. Banganapalle shares the tendency of Kurnool but Sandur differs from the surrounding Bellary. Its present figure of 933 differs widely from that for 1921 and 1911 but is accounted for by a heavy immigration of male coolies to the mining areas. The mining element was much less strongly represented in 1921. In the margin are given the sex components of the average birth and death rates for the natural divisions. Admitted that Madras birthrates have not reached final accuracy, nevertheless these figures show no apparent peculiarity in the general birth or death rates of this central region which might account for the difference in the sex proportion in later years. This point is developed further elsewhere. Emigration is less from this region than for practically any other part of the presidency and to this differential circumstance can be attributed some at least of the variation in behaviour. The regions of heaviest regular emigration, viz., the two most northerly Circars which export men so freely to Burma, the south-east whence go most of the Madras emigrants to Ceylon and the Straits Settlements, and the West Coast which supplies clerks, cooks and restaurateurs to the whole of Southern India, are those which invariably retain a female supremacy of 50 or more per 1,000 males.

	Sex components of			
	Birthrate.		Deathrate.	
	M.	F.	M.	F.
Province ..	16·9	16·2	11·6	11·3
Deccan	18·2	17·6	13·0	12·6
East Coast North.	17·6	16·8	12·0	11·6
East Coast Central.	16·7	15·9	11·1	10·1
East Coast South.	15·2	14·5	11·3	11·2
West Coast ..	18·5	17·7	11·4	11·1

Regional variation.

4. The province continues to return more women than men, the 1931 excess being 591,312 as against 1921's 593,839 in a smaller total population.

The presidency average is 1,025 females to every 1,000 males for the actual population and 1,000 for the natural population. This fall of 25 reflects the nature and extent of Madrasi emigration. The average 1,025 is more a piece

of arithmetic than a really illustrative factor ; only three districts get within 5 of it, only four within 15 and only ten within 25. The median is 1,004 and is more illustrative of average conditions. Marked regional tendencies can be determined from Subsidiary Table *i*. The Agency tracts show a steady increase throughout the 40 years, most rapid in the north and least so in the south, but unbroken in all cases save for a fall in East Godavari during the past decade. At this census the Agency as a whole reaches for the first time an excess of women and one constituent, Ganjam, reaches a figure slightly above the actual presidency average. Forty years ago Ganjam Agency showed 935 women to 1,000 men ; now it has 1,028. As communications improve in tribal areas, plains penetration and settlement increase, tribal movement becomes freer and emigration begins. Most primitive tribes adopted some method of keeping down female population. A section of the Konds, for example, practised female infanticide ; so did the Todas. As plains influence increases and control grows more strict, such customs tend to disappear and conditions to approximate to those of more civilized regions. During a period of steady opening up of such an area one might expect the ratio of women to men to increase equally steadily and this is illustrated by the experience of the Agency tracts and of the Nilgiris. During the forty years 1891–1921 the ratio rose by 110 in this latter district. During the last decade it has fallen again to 842 but artificial conditions of a great labour camp such as exists in connection with the Pykara water power schemes must have contributed greatly in a small population to masking more normal tendencies.

Comparison with other provinces.

5. The figures in the margin compare the sex ratio in Madras with those in other provinces. The presidency continues its comparative isolation among the few areas returning a surplus of women. The other Indian regions to return a female surplus are contiguous to Madras, viz., Cochin and Bihar and Orissa, while the Central Provinces with a par ratio is also a neighbour. It is noticeable that only Madras and some of its neighbours have ever been above par in the last 20 years. The average of the upper group runs about 80 above that of the lower group. Two of the areas in the first group which keep consistently below 1,000 are Deccan and inland areas and a good deal of Bombay comes in the same category. If the Bombay coastal districts were separated from other Deccan regions a markedly differing ratio might be obtained.

FEMALES PER 1,000 MALES.

	1931.	1921.	1911.
Madras and its neighbours.			
Cochin	1,043	1,027	1,007
Madras	1,025	1,028	1,032
Bihar and Orissa	1,008	1,022	1,043
Central Provinces	1,000	1,001	1,008
Travancore	987	971	975
Hyderabad	959	966	968
Mysore	955	962	979
Bombay	918	901	933
Other Provinces.			
Burma	925	955	959
Bengal	924	933	945
Assam	909	920	936
United Provinces	904	912	917
Punjab	831	830	817

Practically every province shows a declining ratio, the only exceptions in the first group being the south-western States, Cochin and Travancore, and Bombay, all West-Coast areas, and in the second group the Punjab which shows a bare increase over 1921. Madras's fall from 1921 is less than in any other province except the Central Provinces.

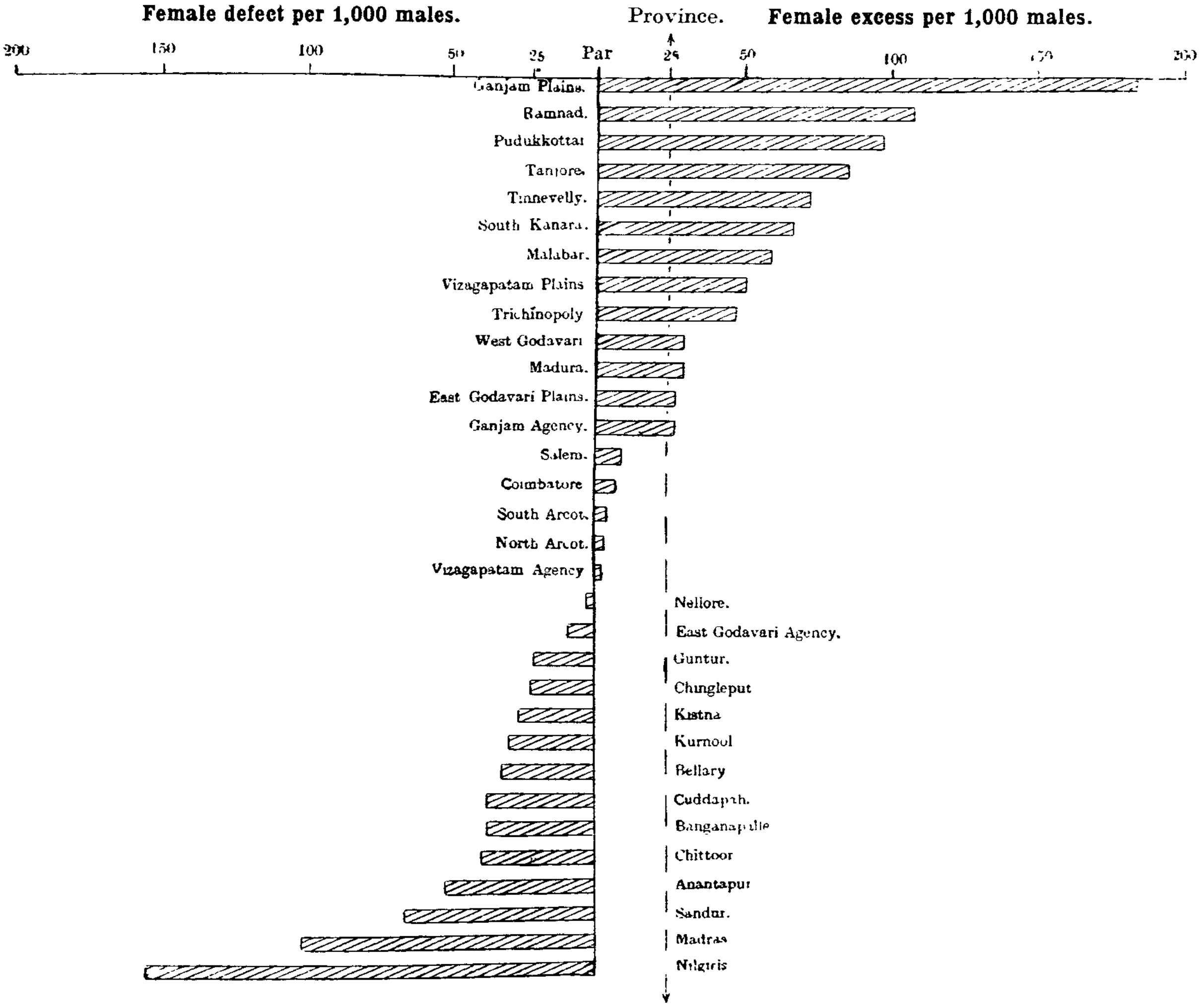
District figures.

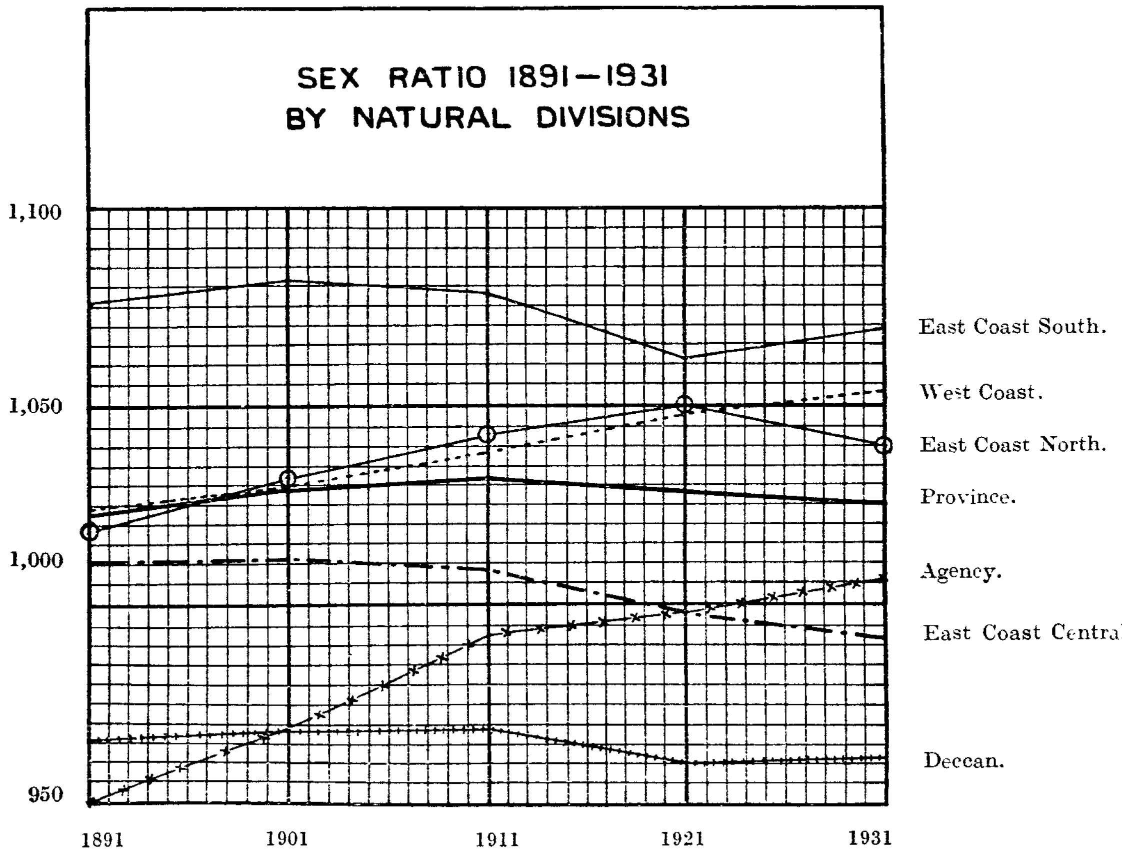
6. The diagram shows the difference in sex ratio with district. A glance shows the top places in female excess to be occupied by those districts which Chapter III has shown to be most prominently associated with emigration. Ganjam plains' great predominance illustrates its contribution to Burma emigration and the predominantly male nature of that contribution. Trichinopoly with an emigration quota directed mainly to Ceylon shows a much lower excess than Tinnevelly or Ramnad, which are less concentrated on the estate labour recruited largely in normal sex proportions. Pudukkottai's high excess seems to indicate a greater proportion of male emigration than was originally suspected.

The two bottom places in the diagram are occupied by two unrepresentative regions, first, the presidency town, second the Nilgiris. The six places nearest are occupied all by Deccan areas or the Chittoor district which in many ways shares the characteristics of the Deccan. Kistna's female defect is due to its inland taluks which border on Hyderabad—a long continuing region of female deficiency. The same applies to Guntur. It is safe to say that if all Madras emigrés were recalled and the ratio then struck such diagrams would offer a very different appearance.

Madras Districts.

Divergence of Male-female Ratio from parity.

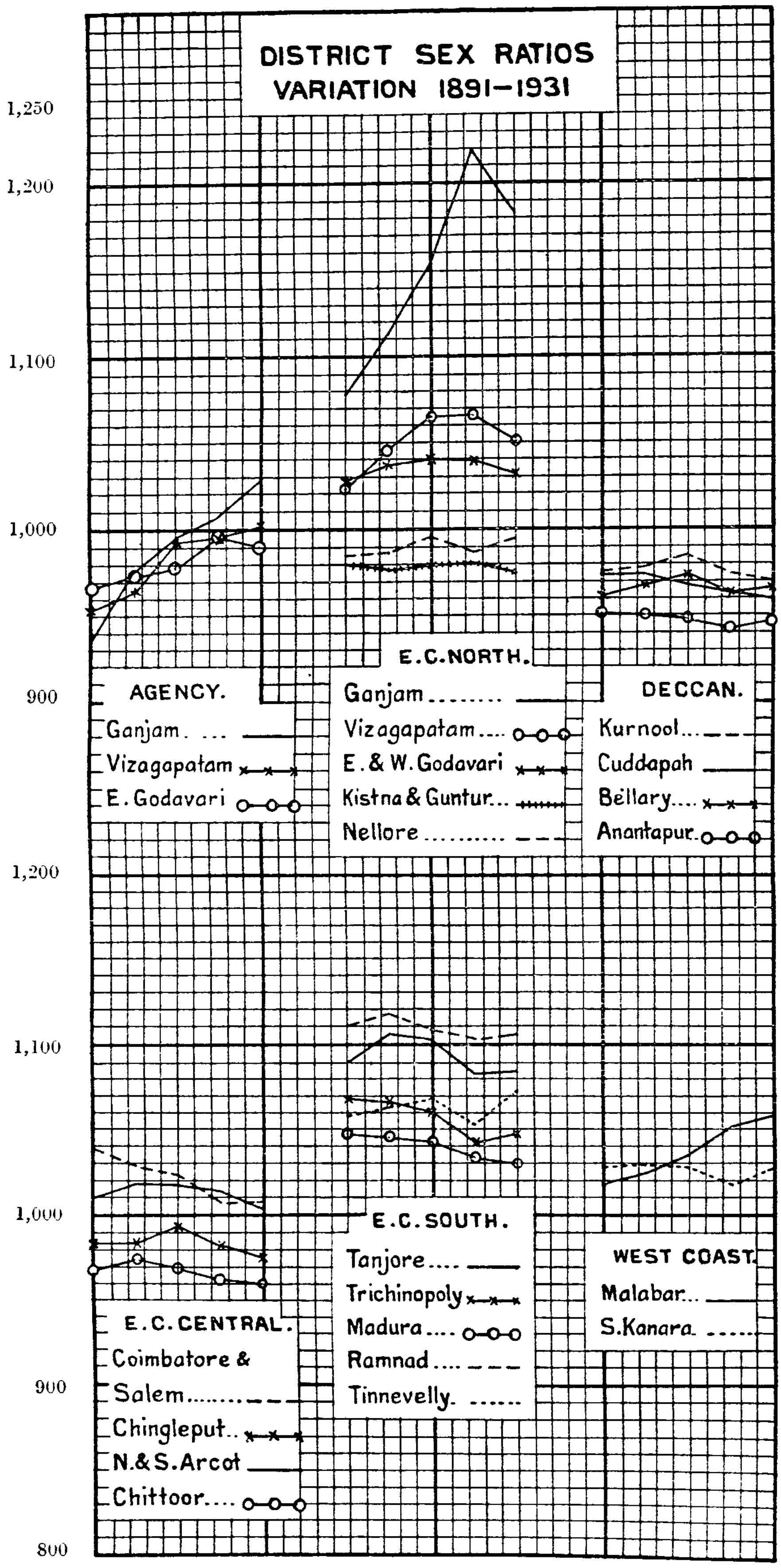




7. The diagram illustrates how sex ratio has varied in the different parts of the presidency. The unbroken rise of the West Coast figure is noteworthy. **Variation by natural division.**

The Agency is the only other region that shows a continuous rise. The East Coast North kept pace with the West Coast till 1921 but has fallen back since then. The East Coast South figure, on the other hand, has taken a rise during the past decade. The Deccan is, as usual, peculiar both in its small range and its low position.

by district, 8. The following diagrams show the district contributions to these natural division sex ratios. They show clearly, for example, how greatly Ganjam has influenced the East Coast North figure, and how the southern districts of the division have varied much less than those to the north. The Deccan district curves lie so close together as to be not easily distinguishable—a striking illustration of the greater homogeneity of the constituents of this region. The generally high level of East Coast South curves is notable, as also the tendency downwards of East Coast Central districts. An interesting point is that all the East Coast North districts, except Nellore, should have shown a decrease in the last decade while the tendency of East Coast South is upwards. So far as Ganjam–Vizagapatam are concerned the return from Burma of a large number of Indians at the close of 1930 and early 1931 probably contributed to lowering the sex ratio at census time.



The East Coast North and East Coast Central groups offer an interesting comparison. In the former the ratio has increased by 21 over the 40 years with a total range of 33. In the latter there has been a steady decrease totalling 19. Ganjam and Vizagapatam are the chief contributors to the rise in the East Coast North figure and Nellore has taken a small share. East Godavari returns now the figure it had in 1891 and West Godavari's is only 3 more. The present figures of Kistna and Guntur are below those for 1891. The three most northerly districts and Kistna (over a much smaller range) show a distinct peak at 1921 ; in West Godavari this peak is in 1911, while for Guntur the fluctuation is very small and no peak can be properly determined. Here as in other ways Nellore differs from its associates by having its peak in 1931 and by being the only district in the division to show an increased ratio over 1921–31. The diminution in the East Coast Central division is contributed to by all the districts, but Coimbatore, Salem and Madras yield much the largest share and South Arcot much the smallest. Coimbatore, Salem and Madras ratios fell constantly throughout the 40 years. In the others the fall began only in 1901 or 1911. The ratio in Coimbatore and Salem is the same as in 1921. In all the other cases the 1931 figure is below that for 1921. The close similarity in the 1931 rates for the two Arcots, Salem and Coimbatore marks them off from their associates in the natural division, Chingleput and Chittoor, whose ratios over the 40 years approximate much more to those for Nellore and the Ceded districts respectively. Coimbatore district has seen much industrial expansion. The Deccan figures are in some ways the most remarkable of all and certainly the most constant. In 1891 the female : male figure was 966 ; in 1931 it is 961. In the interim it had gone to 969. Cuddapah, Kurnool and Anantapur all have lower ratios now than 40 years ago ; all show a maximum in either 1901 or 1911 except Anantapur whose maximum was in 1891. In every case, again with the exception of Anantapur, there has been a decrease since 1921. The East Coast South division shows no steady rise or fall but a fluctuation over a range of 18 with its 1931 ratio below that for 1891. The constituent districts are similarly inconstant. Trichinopoly decreased till 1921 and then rose. Madura has decreased steadily throughout, the others have gone up and down, the most violent fluctuation being in Tinnevelly. The West Coast presents sharp contrasts. The Nilgiris has been already mentioned. South Kanara but for a marked drop in 1921 would have been practically unaltered over the 40 years, for its present figure is identical with that of 1891 and the total range of variation is but 12. Malabar, on the other hand, starting with a ratio of 1,018 has increased steadily and returns now 1,059. This figure and South Kanara's 1,067 are among the highest returned anywhere in the presidency, being exceeded only by Tinnevelly, Ramnad, Tanjore and Ganjam of the other districts.

The range of the district figures over the 40 years varies greatly. Ganjam leads easily with 141 between its minimum in 1891 and its maximum in 1921. Madras follows with a range of 107 in the other direction, representing a continuous decrease from 1891. Agency tracts and the Nilgiris produce the next highest figures, all of them representing a steady increase in female proportion from a commencing deficiency. Malabar's range of 41 on the other hand is all in the upper register so to speak.

9. A general consideration of this ratio produces the following among other tentative deductions. An established emigration habit ought to proclaim itself in a continuing plus ratio for females. A developing emigration habit should produce an increasing female ratio and a fluctuating emigration a fluctuating ratio. A developing primitive region should show a female ratio increasing from an original minority. An area of long established conditions should return a little varying ratio. Industrial expansion should find illustration in a decreasing female ratio. All those points find illustration in Subsidiary Table *i*. Ganjam and Vizagapatam have been sources of constant and developing emigration. In the south-east emigration is a custom of long standing, fluctuating however under the impulse of season conditions and the north-east monsoon. Industrial development has been marked in Madras, Coimbatore and Madura. In the Deccan conditions are long established and vary little.

Distribution by religion and age-group.

10. Subsidiary Table *ii* shows the sex distribution by religion and age-period. The tribal return on this occasion exceeds a thousand for the first time and the Jain figure alone remains below parity. This merely reflects the large contribution made to Jain numbers by moneylenders and other traders who

come from northern India unaccompanied by their families. The tribal figure has shown a steady increase from 969 in 1901 to 1,006 in 1931, an increase reflecting probably the degree to which they are coming under plains and Hindu influence. The Christian figure is identical with 1921, the Muslim figure 3 more and the Hindu figure 3 less. The age-groups show a peculiar behaviour at this census. From 30–60 the sex ratio is less than 1. A deficiency over the whole of this thirty years is unusual, and the figure for 40–50 in particular is unusually low, 944. The same circumstance can be traced in the constituent religion figures but is more marked among Christian and Tribal. Christian women between 40–50 count only 922 to every 1,000 males. This marked fall and particularly that at 40–50 reflects probably the selective effect of influenza which fell more heavily on persons in the prime of life than those at the extremes and on women than on men. The 1921 figures show the 30–40 figure as the lowest in the range 20–50. In 1931 the 40–50 ratio is lowest in this range and markedly so. Persons 40–50 in 1931 were 30–40 in 1921. The ratio for ages 5–10 is below parity in every constituent; only for Muslims and Tribal did this feature obtain in 1921. The fall from the 1921 ratio is pronounced. The 10–15 ratio on the other hand has increased in every case but one. It may be that this reflects an exaggeration of girls' ages due to such legislation as the Sarda Act.

by natural division and age-group,

11. Subsidiary Table *iii* shows the distribution by natural divisions and age-periods. Interesting differences are observable in the Muslim figures for example, but here the total number dealt with in such divisions as the Agency is so small as to vitiate comparisons based on them. The general appearance of the figures is for a female superiority in the early years, a deficiency between 5–15 and again between 30–60. The Deccan however continues the deficiency into the last age-group of all, 60 and over, but the same tendency as elsewhere is shown by the rise of the female quota from 808 at age-group 40–50 to 962 at 60 and over.

by communities.

12. Subsidiary Table *iv* gives the ratio for certain communities. These show peculiar variations among themselves but a general tendency for females to be in deficiency between 7–16 and in excess elsewhere is noticeable. In the case of the Bavuris, Dandasis, Kalinjis, Maravars, Labbais and Telugu Brahmans alone is there a female excess at all ages. Bavuris and Dandasis are both Oriya depressed classes. Kalinjis are also a Ganjam caste. The high ratios in these three castes indicate the importance of their contribution to the Burma emigration which is so marked a feature in Ganjam. Maravars and Labbais hail from the extreme south. The fluctuations in the case of the Kadans reflect very small total numbers and possibly the results of a small-pox visitation.

Europeans and Anglo-Indians.

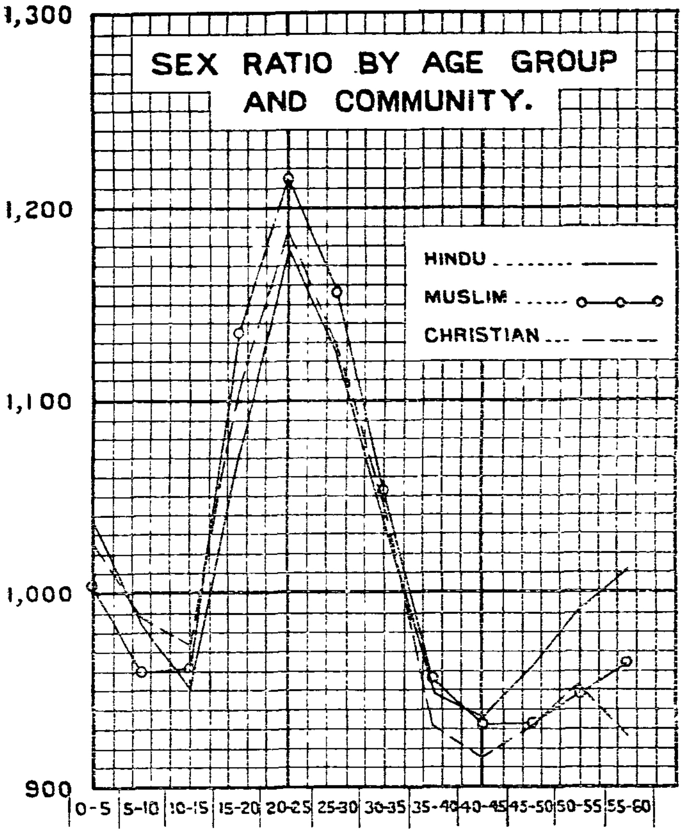
13. Imperial Table XIX gives sex and age figures for Europeans and Anglo-Indians. The former element is not present in natural proportions and detailed study of its sex-ratio sequence would not be justified. The broad facts in its regard remain unchanged, a heavy predominance of males most marked at earlier adult years with a tendency for females to be in excess among adolescents and old people. The latter two circumstances reflect the influence of domiciled Europeans prevailing at age-periods when the transitory European population is little represented in India.

Anglo-Indians are normal residents however and their figures may be more closely examined. Their sex ratio all over is 1,112. Only for three age groups are females in defect, 4–6 and 40–59. On a comparison with the diagram in paragraph 14 the Anglo-Indian curve would spend a much shorter time below the 1,000 mark at the early stages. Its maximum in middle life does not attain that of any of the three communities illustrated in the diagram and seems to arrive rather later. The time at which the ratio goes below and rises again above par in later life approximates fairly closely to those for the Hindus. The peculiar nature of the Anglo-Indian population is indicated by the fact that sex ratio in adolescence and middle life is markedly higher for the city dwellers than for the whole community. Anglo Indian girls as well as men, seek employment in cities.

Age group.	Females per 1,000 males.	Age group.	Females per 1,000 males.
0– 3	1,020	20–29	1,155
4– 6	943	30–39	1,098
7–13	1,006	40–49	996
14–16	1,045	50–59	968
17–19	1,034		

Distribution by religion and age-group.

14. The diagram illustrates changes in sex ratio with age group and community. For all there is a marked diminution in the first 15 years and then a sudden rise, the variation being least in the case of Christians. That the ratio should decrease so markedly in the early years of life is rather surprising.



The diagrams in Chapter IV show that age group 10–15 contributes a much smaller quota to total females than to total males. The drop in sex ratio is another illustration of the same phenomenon, which appears to reflect a difference in vital incidents at these years between the sexes. Subsidiary Table *iii* shows the diminution in early years as most rapid in the Deccan which, starting with the highest ratio of all at age 0–1 has much the smallest at age 4–5 with the exception of the West Coast which in this as in other ways is peculiar. It may be that in this differential diminution at these years there resides part of the cause of the Deccan's continuing deficiency of females. If so, it implies an unusual deathrate among female children in that area. Absolutely accurate vital statistics would be required to test this.

15. One might expect in areas where movement of the population is pronounced the sex ratio to be different for the middle years of life from its figure for the whole course. In regions from which males emigrate freely the ratio might be expected to show a marked increase at the middle period, while in areas which attract immigration the ratio would diminish if that immigration was pronouncedly male.

by district and age group.

The table in the margin shows certain variations in sex ratio with age and district. In the Circars the variation is large in Ganjam, less in Vizagapatam, still less in the Godavaris, and reduced again by a third in Kistna-Guntur. The relative importance of emigration to Burma from these districts is in the approximate ratio 6 : 4 : 3 : 1. Burma emigration is essentially a male phenomenon as we have observed, for the sex ratio of Madrasis in Burma is only 233. The male emigration age coincides with the chief working period, i.e., approximately 15–40. We should expect therefore that the district which sends forth most to Burma should show the greatest effect on its sex ratio at the age when the males go abroad. The figures bear this out. Nellore shows a higher variation than any of its adjoining districts. This is not so much a matter of emigration out of the presidency as of recourse to the presidency town, a large number of whose labourers and factory workers come from this district. North Arcot also yields a high difference but in its case emigration outside the presidency is undoubtedly the chief element, as this district has long been a main contributor to Indians in Malaya. In the south Tamil group of districts, the ratio increases more in Ramnad and Tanjore than in Trichinopoly and Tinnevelly, and Pudukkottai and Madura are also lower. Ramnad's contribution to Ceylon is much more to private emigration than to estate labour. Such emigration is less of a family feature and might be expected to have more influence on the sex ratio at emigration ages. The same applies to Tinnevelly. In the districts contributing heavily to Malaya and Burma, emigration to which

District.	Sex ratio Gross	Sex ratio 15–40.	Difference.	District.	Sex ratio Gross	Sex ratio 15–40.	Difference.
Province ..	1,025	1,081	56	Tinnevelly ..	1,073	1,152	79
Ganjam ..	1,182	1,307	125	Madura.. ..	1,030	1,083	53
Vizagapatam ..	1,051	1,116	65	Pudukottai ..	1,096	1,147	51
East Godavari..	1,028	1,067	39	Trichinopoly.	1,047	1,092	45
West Godavari.	1,031	1,069	38	North Arcot.	1,003	1,071	68
Kistna	973	986	13	Kurnool ..	970	997	27
Guntur	978	992	14	Cuddapah ..	962	987	25
Nellore	997	1,053	56	Anantapur ..	947	967	20
Ramnad ..	1,108	1,211	103	Bellary ..	967	982	15
Tanjore.. ..	1,086	1,136	100				

is more strongly male than that to Ceylon, a greater increase in the sex ratio at 15–40 might be expected. Hence presumably the higher figures for Tanjore and Tinnevelly. Pudukkottai's emigration is almost entirely and Trichinopoly's mainly a Ceylon phenomenon. In Ceylon emigration, the sexes go practically in the normal family constitution, and consequently a much less variation in ratio might be expected.

An interesting accompaniment to these ratios is that of Indians in Malaya between 20–40 and 40–55 where the sex ratio is 370 and 278 respectively. This fact shows how selective Malayan emigration is by age.

The figures for the four Ceded districts illustrate the much less degree to which this region is affected by emigration movements, Bellary, a largely self-contained region, returning the lowest figure. The differences, however, are higher than for Kistna and Guntur. The low divergence in these last is an indication of their prosperity and the lack of necessity to seek sustenance abroad. These two districts have on their western margins much in common with the Ceded districts, a point already dwelt on in previous chapters.

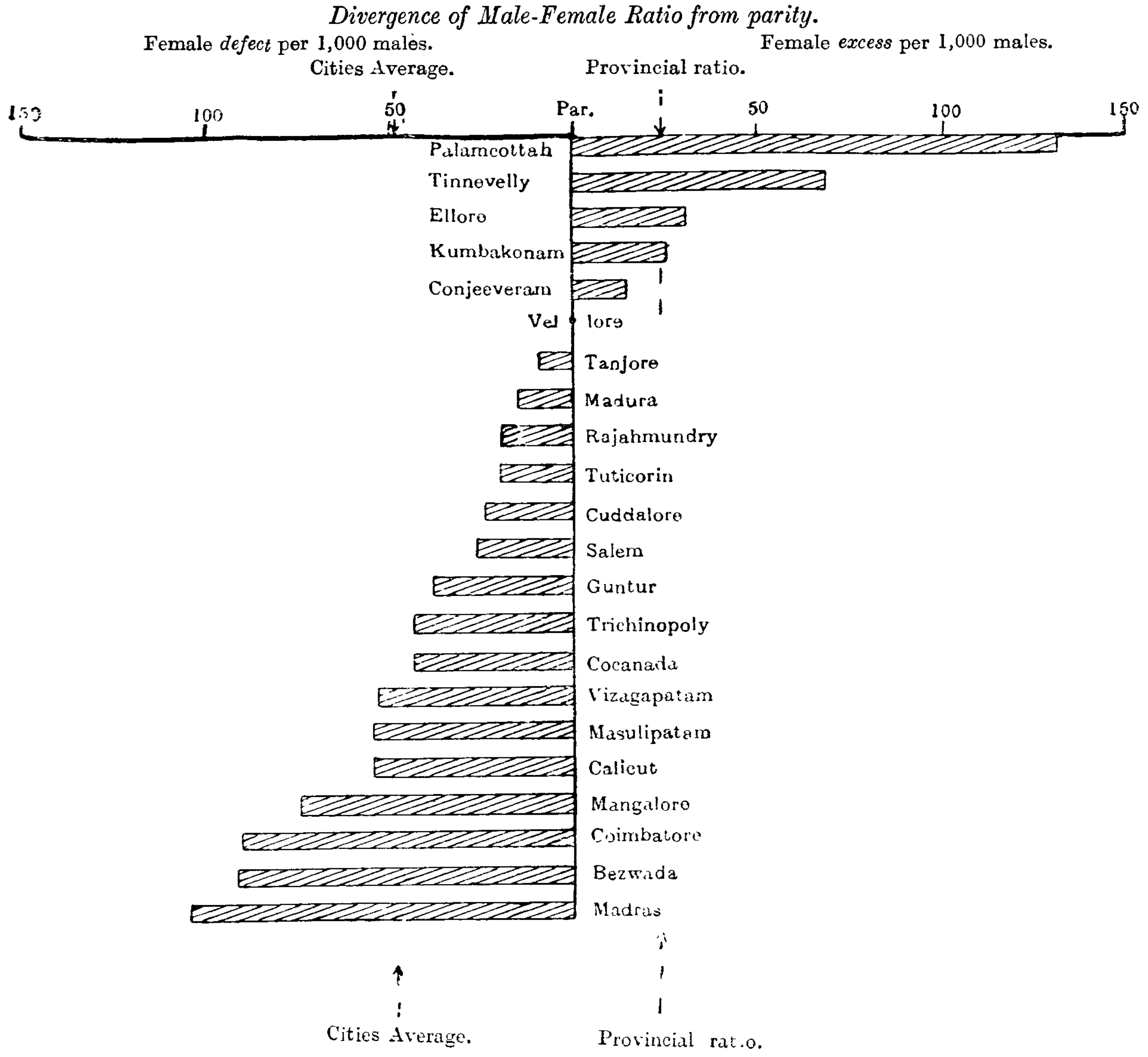
by natural division and age-group.

16. Subsidiary Table *vi* to Chapter IV illustrates the same point from another aspect. This table shows the percentage variation of population by age in the different natural divisions. In all divisions, except the East Coast South, the population at 15–40 increased at a much greater rate over 1921–31 than over 1911–21. In the East Coast South the position is markedly the reverse. This circumstance indicates the great drain of emigration from this area. Matters of sex distribution do not enter here since it is total population that is in question. The East Coast South division showed over 1911–21 a much greater increaes at this age-period than in other natural divisions. This may reflect conditions of the war period which retained many would-be emigrants in their districts. The turnover from 27·6 per cent increase in 1911–21 to 8·3 only in 1921–31 is nevertheless full of significance.

Subsidiary Table *i* to Chapter IV shows the distribution of 10,000 of each sex by age. At ages 20–40 East Coast South and the West Coast have a lower proportion of males than the other divisions. The East Coast South has on the other hand a higher proportion of women than any other division except the Agency. This circumstance indicates that more men at working ages have left this region.

Madras Cities.

Divergence of Male-Female Ratio from parity.



17. The diagram shows how the male-female ratio varies in the 22 cities of the presidency. The figures it represents will be found in Subsidiary Table *iv* to Chapter II. One would expect this ratio to vary with the industrial activity of the city and its surrounding district and the closer the city reflected general district conditions the more should its ratio follow that for the district. On this analogy the more residential towns should return a greater, and those in which industries are rapidly developing or which are great centres of communication a less, female proportion. The diagram bears this out. The Palamcottah-Tinnevelly aggregation easily leads in female ratio ; of the two component parts, Palamcottah is more of a residential town than Tinnevelly and thus the difference in ratio reflects actual conditions. All the three other towns in which females exceed males reflect primarily the life of their region rather than extraneous or exceptional development. Ellore's rise to city status has already been remarked, its origin being chiefly in its promotion to be the headquarters town of a new district. Kumbakonam is essentially a professional and educational centre, Conjeeveram an old-standing religious city. The Madura figure is lower than might be expected in view of the pronounced industrial development of the decade. This city, however, has a large and abiding element representative of the district and the region. As an industrial centre it is of some standing and less dependent on purely immigrant labour which comes generally unaccompanied by families. That the female ratio should be so comparatively little in defect is a matter for congratulation. A comparison of the Coimbatore figure illustrates the essential difference in the conditions of the two towns. Any town of rocket-like growth must have a large excess of males and Coimbatore's position at the bottom reflects this. It is significant that its companions are Bezwada and Madras, Bezwada, a centre of communications where travellers and traders from all parts of India meet, and the presidency town which repeats now a feature that has marked it at successive decades. Rajahmundry and Bezwada again make an interesting comparison. Rajahmundry is an old strategic point and a centre of population of far longer history than Bezwada. It is more the creature of the country in which it is set than Bezwada, which to a large extent is the child of communications. The seaports figure towards the bottom of the diagram, reflecting an inevitable circumstance of all centres of trade and seafaring. It is of interest that Mangalore's proportion should so markedly exceed Calicut's and at first sight it is difficult to account for this. Masulipatam's equivalence with Calicut comes with something of a surprise. Kistna is one of the districts which have shown a male preponderance and therefore the apparent pronounced defect of females in Masulipatam does not represent so great a turnover from district conditions as Coimbatore, Calicut or Vizagapatam.

Cities.

18. A comparison with the 1921 ratios is given below, the cities being arranged according as the ratio has risen or fallen and in order of magnitude of change in each case :—

	+		−		−
Tinnevelly	43	Vizagapatam	72	Kumbakonam ..	22
Tuticorin	36	Cocanada	68	Guntur	18
Palamcottah	35	Masulipatam	63	Vellore	17
Conjeeveram	18	Coimbatore	63	Madras	11
Mangalore	15	Tanjore	50	Calicut	9
Ellore	5	Cuddalore	39	Madura	9
		Trichinopoly	33	Salem	5
		Rajahmundry	30	Bezwada	3

The three Tinnevelly cities are easily first among those in which the ratio has increased, the twin cities of Tinnevelly and Palamcottah keeping close together in this as in other characteristics. Clearly these are not cities to which men come but which they leave in search of work. A good deal of the rise in Tuticorin is probably attributable to the conditions of the considerable area taken within the municipality during the decade. The minus column is headed by a town which has seen a great advent of males during the decade on account of the educational, harbour and other activities. The presence of Cocanada and Masulipatam is rather surprising and indicates apparently a much greater degree of immigration to these places than had been expected. This coupled with the large increase in Masulipatam's population shows that it cannot be quite so derelict as had been supposed. Coimbatore's heavy fall was to be expected having regard to the great industrial development during the

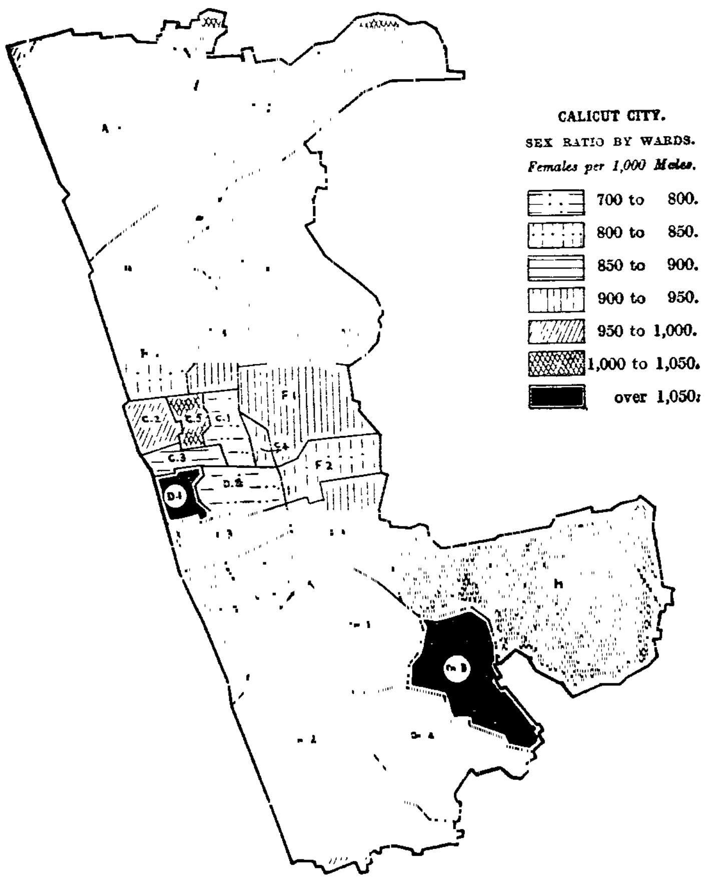
decade and the immigration features attendant upon it. Tanjore's figure is another that is surprising and must reflect to some extent the construction operations on the Mettur canal system with the consequential immigration. It is significant that the ratio in Tanjore district should have increased while that in the town has fallen. The same applies to Trichinopoly town and district and to Calicut and Malabar. This indicates some migration to the town from the countryside. Kumbakonam also shows a fall in sex ratio though not so considerable as Tanjore's. The fall in Cuddalore is accompanied by a fall in the district ratio. South Arcot is a heavy contributor to emigration and ordinarily one would expect this factor to produce results similar to those obtaining in Tinnevelly, viz., an increase in the sex ratio. The general decrease here, therefore, must relate to some other factor. The other figures call for less comment save that Salem's 1921 census was so unreal that no conclusions could be drawn from a comparison of its rates. Its 1911 census, also unrepresentative, yielded a sex ratio of 1,024 while 1901 in which plague conditions were not present gave 1,057. The existence of a downward trend for Salem may therefore be accepted. Apparently, Salem is a city in a sense that Tinnevelly and Palamcottah are not, in that that it attracts at least some immigrants. Probably frequent bad seasons and distress among weavers have led many to seek work in the city.

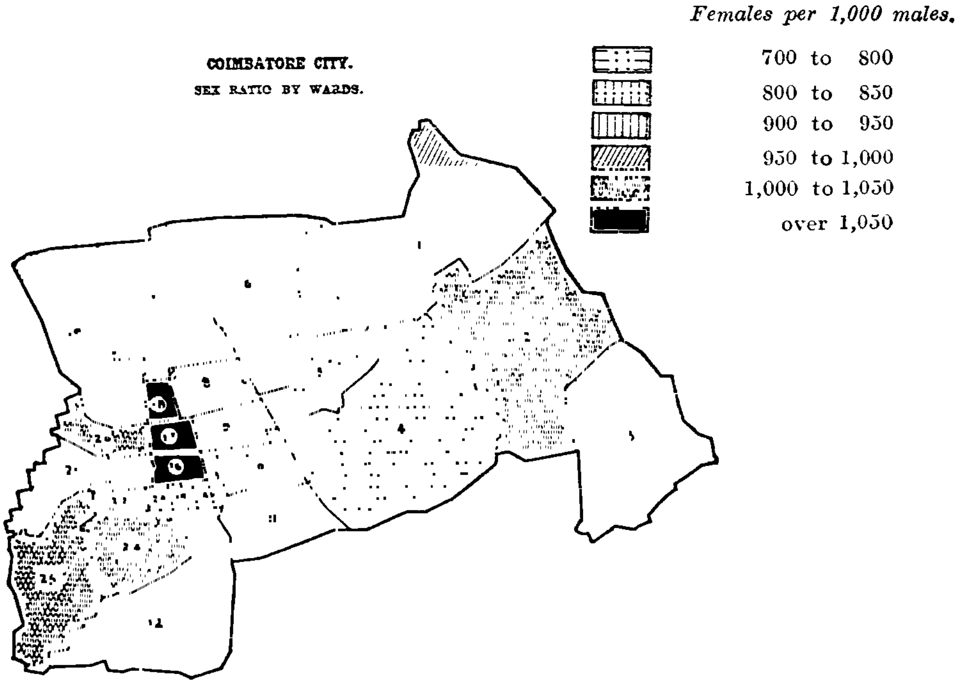
19. The sex ratio by age-groups for cities will be found in the general table for cities which forms an appendix to this report. Where a town reflects closely its district conditions, one would expect the female-male ratio to be greatest at the advanced ages having regard to the well-known fact of woman's greater longevity. It might be expected to be least at the lowest age-group, for more boys are born than girls. It is notable that the ratio has a pronounced maximum at ages 40 and over in precisely those cities of the presidency which depart least from normal district conditions, Kumbakonam, Tinnevelly and Palamcottah. It is also pronounced in Rajahmundry and present in Tanjore, Ellore, Vizagapatam and Masulipatam, all of which cities despite their other activities retain a definite reflection of district conditions. In those where the maximum ratio is most marked appears a minimum at the earliest age-group. This shows how little Kumbakonam, Tinnevelly and Palamcottah depart from ordinary district life. In Masulipatam and Tanjore the minimum is shifted to age-group 15–40. One of these is a seaport, the other has seen a certain amount of immigration during the decade as a result of the Mettur Project. The immigration element, in which the male is always more pronounced, has probably had its influence here. In cities of developing industry or communications, busy seaports, etc., one would expect the ratio to be least at the middle age-group, for to such places flock casual labour, traders, merchants and floating elements generally, in which the female representation is usually slight. An examination of the list shows that precisely in such centres does the minimum appear at 15–40, being notable in Bezwada and Coimbatore, the two cities in which it might have been most expected. Such places should show the ratio greatest at the age-group 0–15, for the male immigrant influx has not taken effect by age 15 and the normal events of birth should retain control at this stage. This is borne out and the ratio is at its greatest at the bottom age-group in all these cities. Madras too shows a maximum at this age.

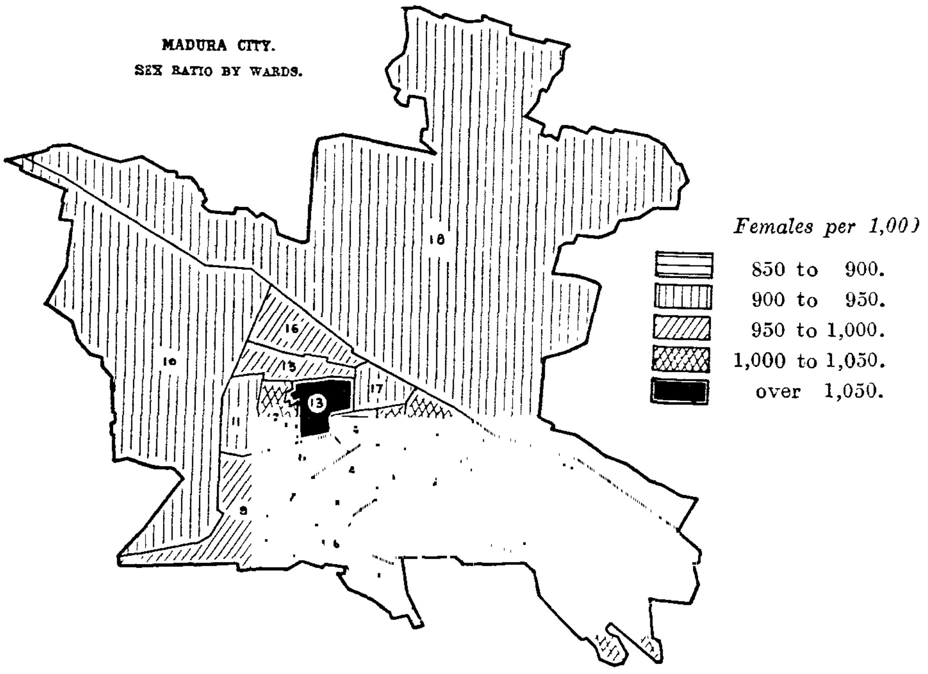
There are some peculiar combinations. Tanjore, Cocanada and Vizagapatam combine a maximum at the last age-group with a minimum at the middle. This has been already referred to, a sufficient element of normal residence existing to bring out the female surplus at 40 and over with a sufficient element of floating population and immigrants to make the minimum at 15–40 instead of 0–15. The ratio is a minimum at 40 and over in Madras, Madura, Salem, Conjeeveram, Tuticorin, Cuddalore and Vellore. This is peculiar and difficult to explain. Madura and Conjeeveram are both pilgrim centres. Pilgrims are generally old and mostly men, and probably all holy centres, especially those in which as in Madura the pious prefer to die, would show the male element relatively strongest at advanced ages. To popular beggar resorts possibly the same might apply. Madras is certainly one such and a partial explanation of the minimum may possibly be due to this. It is difficult to understand however why in the other three cases the minimum should be at this age. Two of them

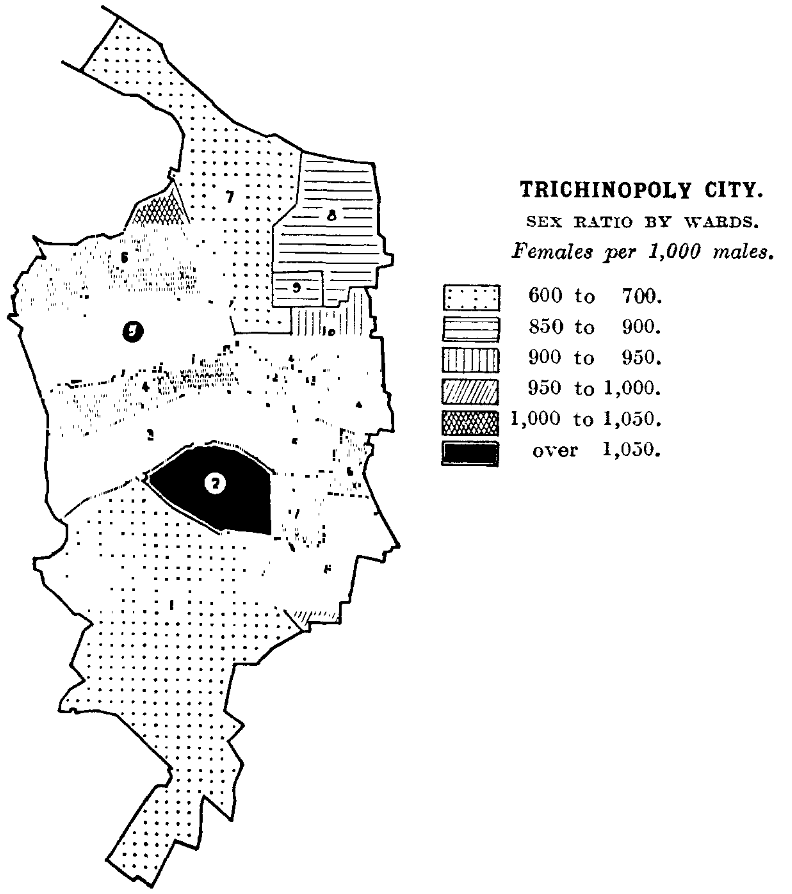
are seaports, as also is Madras, and the seafaring element must always contribute more to the male than to the female. It is not however adequate as an explanation of the phenomenon. Salem is the most puzzling of the lot, but in its case the range from maximum to minimum is slight. The same applies to Cuddalore and Vellore but not to Madras and Tuticorin. In five out of the seven cases a minimum at 40 + is accompanied by a maximum at 15-40. For the ratio to be a maximum at this age means that it is in the prime of life that males are least representated. This one might expect from not prosperous towns which men leave to seek work instead of enter. Cuddalore and Vellore would come under this category and show a maximum for the ratio at the middle age-group.

20. Sex ratio by ward is illustrated for some cities in the diagrams below. A corresponding diagram for Madras city appears in the separate report dealing with it. The shading system is uniform and so differing conditions are clear at a glance. Calicut shows representation for all classes between 700 and 1,050 and over. Coimbatore and Trichinopoly are more capricious, the latter alone of the four having two wards with less than 700 women per 1,000 men. Madura on the other hand has no ward with less than 850. Trichinopoly has the largest expanse of black, but the general hue is darkest in Calicut, implying a greater area over which the sex ratio is little below or is above unity. The figures for the southern ward of Trichinopoly are affected by the presence of troops stationed there. Its parallel to the north is the congested business quarter near the river and the Rock.



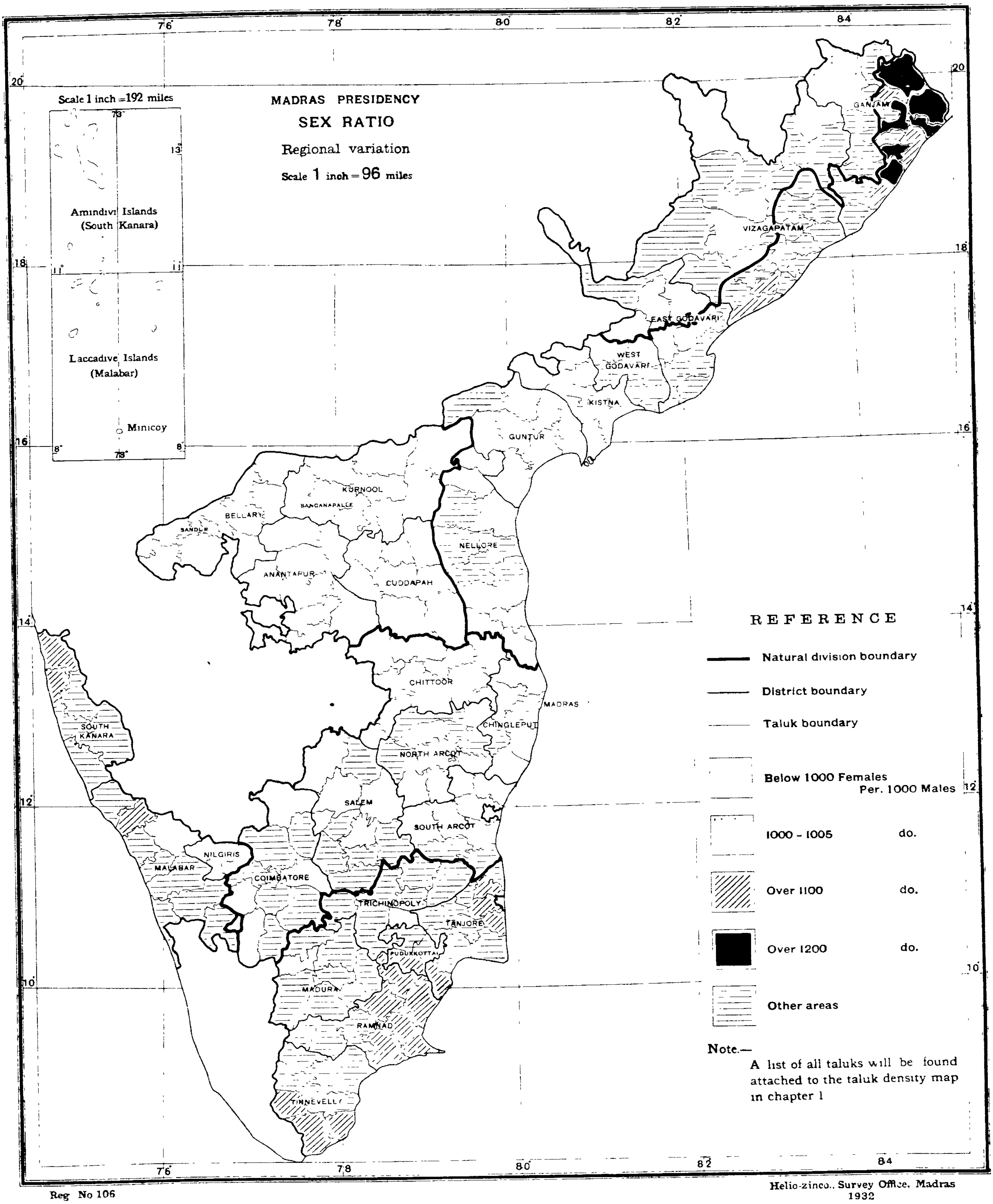






Taluks with female defect,

21. The map opposite which should be compared with that facing page 129 is an attempt to show more closely the presidency area within which women are in defect, and in general to bring into greater relief regional differences in sex ratio. The first point that appears is a considerable extension of the deficiency area and some modification. It covers now the centre and marginal foothill taluks of Vizagapatam Agency and also the large taluk which thrusts into and is practically indistinguishable from the Central Provinces, Naurangpur. One inland dry taluk in East Godavari plains and two in West Godavari represent the extension in this region. All three follow the ghats. The riparian Bhadrachalam now shows a bare excess of females. Other modifications are in Nellore, where five taluks, mostly coastal, now show a female surplus and in Chingleput, where a single taluk drops out, that which contains the



Reg No 106
Copies 1150

Helio-zinco., Survey Office, Madras
1932

unspecified female surplus there is a distinct tendency for the surplus to be greater towards the coast and less towards the interior. Similarly in littoral deficiency districts, Kistna, Guntur and Nellore, the deficiency tends to be less or become a surplus towards the coast. Communications are better towards the coast, particularly on the west, and the proximity of ports makes departure easier. Where communications are easy, movement and therefore emigration (a male phenomenon usually) are freer. It is in coastal areas that population is densest as Map IV in Chapter I shows. There is more likelihood of pressure on subsistence and more inducement to men to seek money elsewhere. On general considerations therefore, one might expect coastal areas to tend to a greater female proportion.

24. Not all the taluks of the deficiency zone show female defect as a continuing feature and not all are present for the same reasons. Deficiency of females may be produced as a result of heavy immigration and any taluk in which a large city exists is not a representative defect area because city conditions exert an undue influence. For this reason the presence of Salem and Coimbatore among the deficiency taluks ought not to be too seriously regarded. Pollachi too has probably been affected by large immigration during the decade. The great increase in the population of Pollachi town referred to in Chapter II is an indication of this. The advent of Trichinopoly taluk to the deficiency areas at this census can be accounted for in the same way.

There remains, however, a continuing body of taluks to which reasons of the above nature do not apply. Padwa and Pottangi show considerable increases in population during the decade but immigration is not apparently the predominant cause, for these same areas showed a female defect in 1921. There is a peculiar continuity even in the exceptions, for in 1921, as in 1931, Cumbum and Palnad taluks were exceptions to their districts' female defect. One of the accretions is probably unrepresentative, viz., Kovvur. At the census time the sweet toddy season was on and about 6,000 immigrant workers were encamped in the palm groves dealing with the toddy. These immigrants were mainly men and Kovvur must at any rate be left till a further census before a female defect can be said to be established. The other continuities of interest are that the same taluks in Nellore show a female defect this year as in 1921, the only change being that Atmakur which in 1921 showed a deficiency now shows a small surplus. Similarly the North Arcot taluks now shown to have a defect had the same to contribute in 1921, except for Wandiwash, a new accretion. So for South Arcot, with the exception that Kallakkurichi is a new addition to the defect list.

In the areas shown with dots almost in every case the 1921 female excess was larger than the small amounts now shown, circumstances pointing apparently to a diminution of sex ratio. Balliguda on the other hand was in defect in 1921 and is plus now. So for Siruguppa and Hadagalli.

The 1921 figures for the Ganjam taluks of heaviest ratios are shown after the 1931 figures. In every case there has been a considerable fall. Apparently the absence of males from Ganjam was more extreme in 1921 than in 1931, a circumstance borne out by the effects of heavy return from Burma elsewhere referred to.

Vital statistics illustration.

25. The figures in the margin show certain differences in behaviour between the districts which unite in showing a deficiency of women. It is the rule in most countries for male deathrates to exceed female. The Public Health Department's annual report for 1930 contains five-year average sex deathrates for 1926–30. These conform to a similar rule for all the presidency districts except four (excluding Madras City, only nominally a district), and over the whole region the average male deathrate is in excess by 1·4. The exceptions are interesting : they are districts lying in the heart of the female

District.	Female minus male deathrate.	Divergence of sex ratio from par.
Anantapur ..	0·9	— 53
Cuddapah ..	0·46	— 38
Kurnool	0·3	— 30
Chittoor	0·28	— 40
Bellary	— 0·24	— 33
Chingleput ..	— 0·48	— 23
Nellore	— 0·6	— 3
Kistna	— 0·74	— 27
Guntur	— 0·9	— 22
Nilgiris	— 1·3	— 158
North Arcot ..	— 0 8	3
South Arcot ..	— 1·1	4

defect area. The table shows the female defect districts in order of superiority of female deathrate. That superiority is greatest in the district which most markedly lacks women, Anantapur. (The Nilgiris is not considered here, for in its case pronounced male immigration is an established feature sufficient to overlay and obscure any tendency and vitiate deduction.) Cuddapah comes near to occupying second place in both tables. Thereafter, strict accord vanishes but there is a tendency for a smaller female defect to accompany a diminishing excess of female deathrate and the districts showing a female deficiency without a superior female deathrate have at least the latter feature below the presidency average, in some cases, e.g., Bellary, markedly so. The map shows only part of Nellore to lie within the defect zone and its deathrate difference figure is lower than that for Bellary and Chingleput which have a much larger proportion within that zone. The Arcots show a bare excess of females and their deathrate difference is close to that of Nellore which returns a bare defect. Both these districts have, as the map shows, a considerable extent within the defect zone. In the Arcots and Nellore, vital statistics by taluks might show deathrate differences varying with the taluk sex proportion variations. Kistna and Guntur offer the chief problem, for but for a single taluk out of eighteen a female defect is the rule whereas in their excess of male deathrate they differ widely from other districts of general female defect.

Connection with differential deathrate.

26. These 5-yearly averages were traced back through Public Health Reports from 1921 to 1929, i.e., an effective range back to 1917. Of the districts shown above, Anantapur throughout produced a female deathrate above the male. So, except in two years when the figures were equal, for Chittoor, and with one lapse Cuddapah. Kurnool, on the other hand, has produced its higher female deathrate only in the latter years. It is interesting to observe that Bellary and Chingleput both showed a higher female rate in the first years which changed to a male excess from 1924 for Chingleput and 1926 for Bellary. The Nilgiris opened with a pronounced excess of female deathrate ; this excess dropped steadily and became a defect from 1928. Both in Kistna and Guntur, on the other hand, the excess of the male rate has tended to fall in latter years and in the former case some of this fall seems to be due to or at least synchronise with, the emergence of West Godavari as a separate district. Throughout the period, the excess of the male rate has for South Arcot kept steadily slightly below the presidency average. This last figure has been remarkably constant, ranging only from 1·1 to 1·4, with however, the higher figures, 1·3 and 1·4 occupying the last five years and 1·4 the last three. Apparently there is a tendency for the excess of the male deathrate itself to increase. Nellore for one year showed a female deathrate above the male.

The table in the margin shows the districts arranged in order of excess of female deathrate taken as the mean of the running averages. Now, for all except Guntur and Kistna and North Arcot, the district order is the same for both columns : the lower the quota of women the more the relative sex deathrates depart downwards from a provincial male average excess of 1·27. The departure in the case of North Arcot is slight, for Kistna and Guntur much more marked.

District.		Female minus male deathrate.	Divergence of sex ratio.
Nilgiris ..	..	0·78	— 158
Anantapur	..	0·75	— 53
Chittoor ..	..	0·36	— 40
Cuddapah	..	0·25	— 38
Bellary ..	..	0·16	— 33
Kurnool ..	..	— 0·15	— 30
Chingleput	..	— 0·30	— 23
Nellore ..	..	— 0·73	— 3
North Arcot	..	— 0·68	+ 3
South Arcot	..	— 1·00	+ 4
Guntur ..	..	— 1·13	— 22
Kistna—			
1921–25	..	— 1·26	— 27
1926–30	..	— 1·12	

The variability of the actual figures must be borne in mind. Methods and accuracy have been in steady development during the decade. The figures themselves are therefore of much less importance than the differences in general behaviour. To these differences some weight can reasonably be given. It is at least a significant coincidence that the districts associated with continuing female defect should have either a female deathrate higher than the male or an excess of male deathrate below the excess of the province or the great majority of districts.

27. The change of sign in the case of Bellary, Chingleput and Kurnool is of interest. Why should the male deathrate have overtaken the female in Bellary and vice versa in its neighbour Kurnool ? Is there anything in the sex mortality conditions of the two districts that would account for this or is it merely oddities of the statistics ? Has childbirth mortality been checked in Bellary relatively to its adjoining districts ? Bellary has acquired a certain fame in baby welfare activities if these are any guide. Such questions cannot be answered from statistics as they exist at present but professional knowledge and experience brought to bear might derive some clue. The variables are as yet many but the facts few. If however differential deathrate indications are any guide, the sex ratio of Bellary should, in the absence of distortion by immigration or other circumstance, show a distinct rise ten years hence, and a rise for the other defect districts is not unlikely, since the female deathrate seems to show a tendency there too to decline relatively to the male.

Analysis.

28. Deductions from vital statistics cannot be pushed very far, for reasons already indicated. In this case, however, where we are dealing not with absolute values but rather with repeated tendency there is more justification for adducing them, and drawing attention at least to the coincidences noted between them and census facts. At least a suspicion is legitimate that there exists some difference between Guntur and Kistna and their western Deccan neighbours in this matter of female defect and in fact that considered from this point of view the two districts are not homogeneous and more than one influence is at work producing the common result of too few women. As stated at the beginning of this chapter, Kistna district is an addition at this census to the defect area because its separation from the present West Godavari brought to light the existence of differing factors in the western from the eastern part of the old Kistna district. The process of division should be carried still further to arrive at the true position regarding the deficiency of females. Women are in defect to the extent of 17,200 in the present Kistna district. 6,000 of this is contributed by Bezwada taluk alone, the headquarters of which are a town which shows the greatest male excess of any city in the presidency, except Madras. Some at least of the city's figures represent the effects of immigration to a large and developing communication centre. The three inland taluks which border on Hyderabad contribute 6,000 more with the result that the four inland taluks of the district contribute two-thirds of the male excess. It is a legitimate deduction therefore that this male excess is a feature of the western and inland rather than of the eastern and delta taluks of the district.

Disturbing influences.

29. Reference has already been made to the effects of immigration to a prosperous region in producing an excess of males. For 30 years past these Telugu deltas have been developing and prospering. Their increase figures over the last decade are much above those of neighbouring districts. The logarithmic curve in Chapter I shows the comparative rates. It is the delta taluks which have been prospering and to them has gone, I think, a continuing degree of immigration. The increase figures for these taluks are much above those of the inland taluks already referred to. Consequently, at least the irrigated and prosperous taluks of the Kistna delta in the districts of Kistna and Guntur are not, in my opinion, a chronic defect area but one in which a not very great male excess is the reflection of the continuing immigration which prosperity brings. It is significant that Palnad taluk in Guntur, which is not one of the more prosperous areas, continues at this census to show the small surplus of women it had in 1921. Palnad does not attract immigration. Its census increase for the last decade was below that of the delta taluks. Hence it has preserved probably its normal position and its small female excess is representative of the region. Cumbum taluk in Kurnool, which preserves also a small female excess, adjoins Palnad on the west.

In Nellore the same forces are at work as in Palnad. There is no immigration which would upset the normal sex balance, and thus the effective division of the district into two regions is maintained.

True defect zone.

30. To sum up, therefore, the coastal taluks of Kistna and Guntur are not part of the chronic defect region. It is unfortunate that no vital statistics exist by taluks, at any rate in any accessible form, for it would have been interesting to see whether in the western taluks of Kistna and Guntur the female

deathrate preserved an excess over the male as happens in Anantapur, Kurnool, Cuddapah and Chittoor. Madras vital statistics as published deal solely with the district and make no selection of figures even for groups of districts. I would suggest for consideration the preparation in future Public Health reports of group figures on the lines of the subsidiary tables in this report, but with a closer recognition of effective boundaries. Where necessary, taluk figures should be taken out for illustration. Madras Presidency is so far from homogeneous in its natural conditions that the usefulness of published vital statistics would be greatly enhanced if in the reports some recognition and treatment were given of the widely differing regions which go to make up the province.

Particular causes of female defect.

31. We have gone some way in defining the true defect area with more accuracy, but we have yet to allot any cause. Here again a closer analysis of specific deathrates for particular regions of the presidency would be of value. The true regions of defect is associated with the Eastern Ghats and the Deccan and the borders of the Mysore plateau. What circumstances exist peculiarly in these areas to produce a continuing female deficiency would need really a professional enquiry. Most of the defect area coincides with the plague region of Madras and plague is said to bear more severely on women than on men. Plague has been greatly reduced within the decade and if it has been an appreciable influence its diminution should be reflected in a decrease in sex disparity. If, as is alleged, malaria has a selective lethal influence on women, an analysis of the specific deathrate from that disease for this region might produce matter of value. Health Officers' reports for the Ceded Districts in latter years lay considerable stress on the prevalence of malaria which is said to be endemic to a considerable extent. Practical depopulation is attributed to it in parts of Anantapur, particularly in Kadiri and Dharmavaram taluks. The whole bank of the Tungabhadra river in Bellary and Kurnool is a malarial region; much of it is recognized as such by the Madras Government in their issues of free quinine. In Cuddapah also, especially in the canal zone and in the quarry areas, malaria is rife. In general in this region sanitary conditions are low. Houses seem often to have been built primarily to shelter rather animals than human beings. The District Health Officer of Bellary remarks in one of his reports: ' Pregnancy, parturition and lactation as a result of these conditions instead of being physiological become pathological '. If this is so a markedly higher maternal mortality ought to appear and would go some way to explaining the continuing deficiency of females in this area. The presence of endemic malaria in such a taluk as Ponneri might receive exhaustive professional examination.

Vital statistics the true key.

32. Strictly speaking, vital statistics should throw a fuller light on sex ratio than census returns, for these last are affected by such circumstances as migration, which, as has already been shown, can produce much distortion. Complete and absolutely accurate vital statistics would show by such circumstances as differential birth and death rates the effective sex distribution. For this not only would general rates be required but specific rates and for deaths age-group rates. Madras vital statistics do not reach the standard required, but Subsidiary Table *v* may be referred to for some indication of how the statistics run. This table shows that female births have risen proportionately to male as compared with the previous decade and that the decade ratio is slightly above even that for 1901–10. The female deathrate has also improved relatively to the male over the previous decade, but is much less favourable than that in the first decade of the century. Relative improvements in both rates should produce a cumulative effect towards an increased female proportion. The figures show that the ratio of female to male births was at its highest in 1926 but in the last year of the decade was below that for the first. The ratio of female to male deaths also reached a first peak in 1926 but was higher in the last year of the decade than in the first, reaching a figure exceeded in the last 30 years only by that of the influenza year.

Something in all these changes refers directly to changes and improvements in the statistics themselves and consequently deductions are unjustifiable, at least by the layman, without wide and professional knowledge of the statistics and their implications.

General causes of female defect.

33. Even after allowing for emigration the province sex ratio is unity. The latter ratio is only an approximation, for the emigration returns contain certain variable elements. It is, however, a good approximation, and it is clear that the Madras effective sex ratio is considerably misrepresented by the gross figure of 1025. Even with a ratio of unity Madras seems to retain a higher ratio than other parts of India. Various causes have been assigned for the prevailing deficiency of women in India and it appears that these must have less influence in this province than elsewhere. The causes are generally stated as infanticide, neglect of female children, evil effects of early marriage and premature childbirth, high birthrate and primitive midwifery, harsh treatment accorded to women, especially widows, and hard work done by them. Most of these contain a large conjectural element. One refers to vital statistics which should be considerably improved before positive deductions are made from them. On a general view the first cause may be dismissed as far as Madras is concerned. Infanticide prevailed at one time among a section of the Konds and among Todas and probably to some extent in other communities. It does so no longer, or at any rate to no appreciable extent. The diagrams in Chapter IV show females at the earliest group as regularly furnishing if anything rather a greater quota to their sex than boys of 0–5 to the males. Nor can the neglect of female children be said to be a marked feature of the presidency life, however expensive a daughter may be in her later years. Any such neglect would tend to show itself in a differential deathrate at early ages and between ages 1–5 the tendency is in fact for more girl children to die. Possibly some small weight should be allotted to this cause but certainly no undue prominence should be given. It is probably true to say that so far as this type of cause is concerned Madras is much more advanced than the rest of India.

Early marriage, etc.

34. Early marriage, or to be precise consummated marriage, has undoubtedly serious effects on female survival. In midwifery much remains to be done before perils which should never exist but attend upon childbirth in Madras, are removed. The age curves illustrate this in the marked fall in the female quota at 10–15 and 15–20 as compared with males. It is probable, however, that peculiarities in age return contribute to this effect, and this cause is one which lends itself easily to spectacular exaggeration. The attribution of female defect to harsher treatment of the sex and hard work done by them would be a circumstance of general application in India where among the lower classes women habitually engage in labour of all kinds along with men. Where life is hardest and nature most unkind one might expect an even larger share of hardships to fall on women. Where the soil yields grudgingly, women's effort must enter more to bring up the household income. It is possibly significant that it is the area in Madras presidency where life is in some ways hardest that yields a continuing deficiency of women. The Deccan districts are the presidency's famine zone where climate is most uncertain. The extensions of the deficiency belt are generally among hills where soil is poor and conditions difficult. It is easy, however, to attach too much importance to this and there are distinct limits beyond which conjecture ceases to be useful or even interesting. Accurate specific vital statistics would probably go a long way towards solving the problem of sex defect in Madras, or in fact would solve it altogether, and they remain the great desideratum in this as in other problems to which the census report has to refer.

Fertility.

35. After the subsidiary tables at the end of this chapter will be found some tables giving the results of an enquiry into fertility held for the presidency. This was not a part of the general census enquiry and was not covered by legislative enactment. It depended largely on how far district, municipal and local board officers were prepared to assist. The returns are not very satisfactory in numbers. Many officers were apprehensive of possible resentment from encouraging an enquiry into such matters as sex of child first born, age at marriage, duration of marriage, etc. Some (including more than one District Collector) wrote to me protesting vigorously against such an enquiry. In the circumstances a great response could not be expected. The East Coast North furnished most of the returns, the East Coast Central coming next. The West

Coast furnished practically none, whereas, I believe, in the adjoining States of Travancore and Cochin, very full returns were received, the enquiry being made practically a part of the census procedure.

In any deductions allowance must be made for the comparative paucity of the returns. It is, however, interesting to notice that in every case fewer females are born than males, thus bearing out well-established belief. It is odd that in the region which invariably shows a deficiency of women the number of females born per thousand males should be greatest, the only time 90 per cent is exceeded.

The average size of family is least where the occupation of the father is instruction. Professional, clerical and commercial occupations follow, while landlords, an elastic term which probably includes many who would be better termed small farmers, yield the largest total of the classified series. The proportion of survivals is greatest in the category with the smallest family, instruction; and professional and clerical families yield the next best result. Here again experience in other countries is confirmed. The survival is least among artisans and general labourers.

The number of children born is greatest where the wife was aged between 20 and 30 at marriage, and least where she was 13 to 14. The survivals, however, are least where the wife's age at marriage was 30 and over.

The proportion of sterile marriages diminishes markedly with increase in the wife's age at marriage. Far more numerous figures, however, would be required in this table to justify any deductions.

An enquiry of this sort conducted exactly and on a large scale has great possibilities and interest, and, so far as Madras experience has shown, the fears of those officers who anticipated resentment and trouble were largely unfounded. I would suggest for consideration that if a similar enquiry is held in 1941 it should be a part of the ordinary census questionnaire.

i.—Proportion of Sexes by natural divisions and districts.

Natural division and district.	Females per 1,000 males.				
	1931.	1921.	1911.	1901.	1891.
1	2	3	4	5	6
Province (Actual Population) ..	***1,025***	***1,028***	***1,032***	***1,029***	***1,023***
Province (Natural Population) ..	***(1,000***	***1,005***	***1,017***	***1,029***	***1,025)***
Agency	***1,006***	***998***	***993***	***969***	***950***
Ganjam	1,028	1,007	994	976	935
Vizagapatam ..	1,002	996	996	965	953
Godavari, East..	991	996	979	974	966
East Coast, North..	***1,039***	***1,051***	***1,043***	***1,031***	***1,018***
Ganjam ..	1,182	1,220	1,153	1,113	1,079
Vizagapatam ..	1,051	1,067	1,065	1,047	1,023
Godavari, East..	1,028	1,046	1,043	1,041	1,028
Godavari, West.	1,031	1,034	1,039	1,035	1,028
Kistna	973	980	978	975	977
Guntur	978	982	982	980	982
Nellore	997	987	996	988	985
Deccan	***961***	***960***	***969***	***969***	***966***
Cuddapah ..	962	964	969	976	974
Kurnool.. ..	970	975	984	979	975
Banganapalle State.. ..	962	977	989	988	969
Bellary	967	961	975	970	962
Sandur State ..	933	1,005	1,015	979	991
Anantapur ..	947	942	949	951	952

Natural division and district.	Females per 1,000 males.				
	1931.	1921.	1911.	1901.	1891.
1	2	3	4	5	6
East Coast, Central.	***992***	***997***	***1,008***	***1,011***	***1,011***
Madras	897	908	946	984	1,004
Chingleput ..	977	984	993	984	983
Chittoor	960	962	970	975	968
North Arcot ..	1,003	1,013	1,022	1,024	1,014
Salem	1,009	1,009	1,020	1,029	1,038
Coimbatore ..	1,007	1,007	1,027	1,030	1,040
South Arcot ..	1,004	1,013	1,014	1,014	1,006
East Coast, South ..	***1,069***	***1,063***	***1,078***	***1,081***	***1,076***
Tanjore	1,086	1,083	1,104	1,105	1,090
Trichinopoly ..	1,047	1,042	1,061	1,065	1,069
Pudukkottai State	1,096	1,082	1,095	1,104	1,097
Madura	1,030	1,033	1,042	1,046	1,047
Ramnad	1,108	1,103	1,109	1,117	1,111
Tinnevelly ..	1,073	1,052	1,069	1,063	1,057
West Coast ..	***1,053***	***1,048***	***1,038***	***1,030***	***1,024***
Nilgiris	842	888	868	840	778
Malabar	1,059	1,051	1,034	1,024	1,018
South Kanara ..	1,067	1,057	1,068	1,069	1,067
Anjengo	1,120	1,096	1,071	1,102	1,113

Proportion based on natural population is given in parentheses.

ii.—Females per 1,000 males by religion and age.

Age.	All religions.				Hindu.				Muslim.				Christian.				Tribal.				Jain.			
	1931.	1921.	1911.	1901.	1931.	1921.	1911.	1901.	1931.	1921.	1911.	1901.	1931.	1921.	1911.	1901.	1931.	1921.	1911.	1901.	1931.	1921.	1911.	1901.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Total all ages	***1,025***	***1,028***	***1,032***	***1,029***	***1,026***	***1,029***	***1,033***	***1,029***	***1,026***	***1,023***	***1,029***	***1,032***	***1,020***	***1,020***	***1,030***	***1,033***	***1,006***	***996***	***989***	***969***	***826***	***877***	***906***	***940***
Total 0–30	***1,046***	***1,038***	***1,032***	***1,027***	***1,045***	***1,037***	***1,031***	***1,027***	***1,049***	***1,037***	***1,029***	***1,028***	***1,053***	***1,059***	***1,050***	***1,043***	***1,071***	***1,056***	***1,035***	***1,023***	***836***	***866***	***904***	***925***
0–1	1,035	1,024	1,027	1,041	1,037	1,026	1,029	1,043	1,007	991	1,002	1,013	1,042	1,034	1,010	1,036	1,062	1,071	1,046	1,064	1,057	1,035	1,070	1,010
1–2	1,037	1,036	1,055	1,051	1,040	1,039	1,060	1,054	1,015	994	1,026	1,009	1,033	1,053	1,011	1,059	1,065	1,069	1,037	1,062	1,049	972	1,112	969
2–3	1,050	1,060	1,039	1,058	1,053	1,065	1,043	1,063	1,019	1,011	1,003	1,005	1,042	1,033	1,012	1,018	1,062	1,088	1,057	1,088	994	968	1,040	1,104
3–4	1,036	1,066	1,054	1,067	1,040	1,072	1,057	1,070	998	1,007	1,014	1,024	1,022	1,053	1,044	1,050	1,050	1,075	1,062	1,098	970	1,046	971	1,032
4–5	1,011	1,030	1,022	1,040	1,015	1,029	1,026	1,043	974	1,004	987	986	998	1,054	980	1,027	1,045	1,186	1,028	1,084	965	996	1,146	1,077
Total 0–5	***1,034***	***1,044***	***1,038***	***1,051***	***1,037***	***1,047***	***1,042***	***1,055***	***1,003***	***1,002***	***1,005***	***1,007***	***1,027***	***1,045***	***1,012***	***1,036***	***1,056***	***1,107***	***1,046***	***1,082***	***1,009***	***1,008***	***1,063***	***1,040***
5–10	983	1,023	1,015	1,008	985	1,026	1,017	1,011	960	994	1,000	988	988	1,037	1,029	1,012	965	996	969	959	912	1,001	1,062	997
10–15	952	936	922	902	951	936	922	902	962	921	921	902	974	967	960	937	940	895	879	857	804	808	875	905
15–20	1,080	950	996	944	1,073	938	986	934	1,134	1,041	1,057	1,014	1,105	1,036	1,072	1,017	1,246	1,082	1,167	1,089	731	727	794	810
20–25	1,182	1,230	1,197	1,248	1,179	1,227	1,196	1,245	1,223	1,252	1,183	1,272	1,186	1,236	1,218	1,262	1,278	1,362	1,293	1,284	806	840	851	905
25–30	1,127	1,119	1,088	1,120	1,125	1,119	1,089	1,120	1,157	1,142	1,101	1,156	1,129	1,122	1,105	1,139	1,097	1,044	996	1,005	773	776	795	867
Total 30 and over	***987***	***1,011***	***1,032***	***1,030***	***990***	***1,016***	***1,036***	***1,033***	***978***	***998***	***1,028***	***1,040***	***955***	***951***	***993***	***1,014***	***885***	***893***	***902***	***872***	***810***	***892***	***909***	***961***
30–40	996	1,000	1,043	1,025	996	1,002	1,047	1,027	1,008	999	1,030	1,022	993	983	1,017	1,042	935	963	959	956	721	825	829	883
40–50	944	1,004	991	978	947	1,009	994	981	932	987	998	1,014	922	978	987	978	795	846	814	744	759	836	811	898
50–60	994	1,000	1,009	1,009	999	1,008	1,012	1,012	955	970	999	1,027	942	902	968	972	865	816	872	811	913	930	989	1,031
60 and over	1,044	1,063	1,109	1,176	1,052	1,073	1,115	1,183	1,012	1,045	1,110	1,152	925	885	973	1,066	956	823	961	1,002	1,040	1,085	1,152	1,141

iii.—Females per 1,000 males by religion, age and natural division.

Age.	Agency.				East Coast, North.				Deccan.				East Coast, Central.				East Coast, South.				West Coast.			
	All religions.	Hindu.	Muslim.	Christian.	All religions.	Hindu.	Muslim.	Christian.	All religions.	Hindu.	Muslim.	Christian.	All religions.	Hindu.	Muslim.	Christian.	All religions.	Hindu.	Muslim.	Christian.	All religions.	Hindu.	Muslim.	Christian.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Total all ages	***1,006***	***1,003***	***901***	***997***	***1,039***	***1,045***	***969***	***982***	***961***	***964***	***941***	***972***	***992***	***994***	***937***	***977***	***1,069***	***1,061***	***1,213***	***1,082***	***1,053***	***1,060***	***1,041***	***1,032***
Total 0-5	***1,062***	***1,057***	***960***	***1,058***	***1,052***	***1,055***	***1,009***	***1,037***	***1,009***	***1,010***	***995***	***1,038***	***1,028***	***1,030***	***992***	***1,009***	***1,072***	***1,063***	***1,198***	***1,096***	***1,053***	***1,056***	***1,047***	***1,041***
0–1	1,067	1,063	1,271	1,027	1,035	1,035	1,029	1,042	1,048	1,051	1,042	991	1,036	1,037	1,014	1,039	1,044	1,044	1,031	1,057	1,002	1,008	980	1,039
1–2	1,069	1,065	985	1,115	1,042	1,042	1,032	1,057	1,051	1,051	1,056	1,031	1,039	1,041	1,015	1,026	1,042	1,045	1,024	1,020	1,005	1,008	996	1,021
2–3	1,079	1,081	1,013	1,096	1,063	1,064	1,077	1,052	1,057	1,056	1,056	1,091	1,054	1,056	1,023	1,036	1,042	1,045	1,016	1,032	1,010	1,016	994	1,022
3–4	1,055	1,056	1,092	1,034	1,051	1,053	1,035	1,022	1,037	1,036	1,035	1,065	1,044	1,045	1,021	1,032	1,028	1,031	997	1,019	987	997	963	983
4–5	1,027	1,022	1,026	1,044	1,024	1,029	968	983	1,007	1,002	1,016	1,040	1,021	1,022	1,001	1,003	1,005	1,006	979	1,016	962	971	945	943
Total 0-30	***1,058***	***1,056***	***1,076***	***1,063***	***1,043***	***1,044***	***1,026***	***1,030***	***1,039***	***1,038***	***1,040***	***1,043***	***1,039***	***1,041***	***1,015***	***1,027***	***1,032***	***1,034***	***1,009***	***1,028***	***994***	***1,001***	***977***	***1,003***
5–10	961	957	979	964	984	986	967	964	989	991	973	990	982	983	959	979	998	996	1,004	1,022	955	962	935	962
10–15	939	935	931	941	952	953	952	943	921	924	909	908	941	941	946	959	976	967	1,083	1,017	962	967	945	988
15–20	1,232	1,224	950	1,199	1,111	1,114	1,047	1,113	993	991	994	1,044	1,024	1,025	1,012	1,023	1,103	1,079	1,506	1,153	1,123	1,120	1,134	1,101
20–25	1,257	1,248	942	1,278	1,194	1,200	1,089	1,170	1,105	1,106	1,076	1,199	1,133	1,139	1,047	1,069	1,229	1,207	1,610	1,270	1,234	1,228	1,264	1,163
25–30	1,059	1,050	849	1,048	1,102	1,107	1,005	1,070	1,032	1,035	990	1,131	1,101	1,108	988	1,017	1,206	1,193	1,439	1,243	1,217	1,210	1,253	1,160
Total 30 and over	***898***	***900***	***784***	***864***	***1,014***	***1,025***	***887***	***874***	***874***	***880***	***834***	***841***	***925***	***930***	***825***	***909***	***1,064***	***1,056***	***1,243***	***1,055***	***1,055***	***1,068***	***1,026***	***1,014***
30–40	909	904	740	885	1,000	1,009	885	909	877	881	845	908	951	956	852	927	1,082	1,072	1,275	1,104	1,067	1,065	1,077	1,062
40–50	820	824	704	819	970	981	854	829	808	813	784	760	886	890	807	880	1,043	1,034	1,232	1,046	983	997	949	980
50–60	924	932	914	856	1,011	1,024	893	849	909	919	858	816	938	942	819	948	1,057	1,053	1,193	1,022	1,046	1,075	970	992
60 and over	1,070	1,094	1,100	914	1,144	1,165	944	890	962	980	874	824	914	919	784	859	1,062	1,059	1,237	969	1,195	1,235	1,112	1,021

iv.—Females per 1,000 males by communities.

Community.	Females per 1,000 males. All ages.	0–6.	7–13.	14–16.	17–23.	24–43.	44 and over.
1	2	3	4	5	6	7	8
Adi-Andhra	1,030	1,026	926	930	1,349	1,066	933
Adi-Dravida	1,016	1,038	934	836	1,244	1,075	899
Anglo-Indian	1,055	979	1,005	1,044	1,099	1,179	981
Arya Vaisya	973	983	938	908	1,086	898	1,059
Bant	1,065	994	986	969	1,126	1,100	1,169
Bavuri	1,246	1,039	1,051	1,216	1,884	1,374	1,181
Boya	988	1,043	991	856	1,184	961	888
Brahman, Kanarese	1,015	1,020	982	1,004	1,111	981	1,030
Do. Malayalam ..	860	1,014	937	1,098	891	739	807
Do. Oriya	1,103	1,023	940	903	1,288	1,146	1,237
Do. Tamil	1,036	1,036	995	959	1,101	997	1,107
Do. Telugu	1,050	1,070	1,038	1,022	1,087	965	1,155
Chakkiliyan	998	1,042	934	812	1,232	1,067	819
Chenchu	939	1,012	793	1,024	1,195	967	681
Cheruman	1,076	1,025	934	976	1,340	1,112	1,125
Dandasi	1,303	1,108	1,013	1,178	1,758	1,534	1,279
Golla	1,016	1,038	975	873	1,150	1,024	995
Holeya	1,241	1,041	980	951	1,677	1,455	1,444
Kadan	1,284	956	2,176	2,600	2,087	934	1,276
Kalingi	1,019	885	1,023	877	1,178	1,056	1,062
Kalinji	1,437	1,397	1,223	1,282	1,665	1,604	1,367
Kallan	1,083	1,017	988	890	1,218	1,151	1,119
Kond	1,025	1,050	995	1,098	1,283	971	905
Karnam	959	956	867	897	1,023	988	994
Labbai	1,156	1,002	1,007	1,225	1,449	1,252	1,168
Madiga	976	1,038	931	853	1,217	978	833
Mala	1,029	1,038	930	871	1,247	1,094	935
Maravan	1,036	1,025	1,004	873	1,165	1,093	962
Nayar	1,085	996	969	990	1,111	1,121	1,246
Pallan	1,060	1,031	947	861	1,322	1,141	993
Panchama	1,027	967	969	1,052	1,250	1,066	936
Paraiyan	1,055	1,057	925	873	1,308	1,138	965
Razu	1,010	955	1,045	1,070	1,112	937	1,037
Savara	1,024	1,069	994	1,021	1,270	984	882
Sengunthar	1,008	1,015	1,017	913	1,076	1,033	937
Telaga	1,025	992	981	976	1,025	1,032	1,121
Toda	756	1,394	1,269	435	644	708	553
Valluvan	1,039	1,011	1,018	932	1,133	1,115	940
Vanniyan	1,000	1,033	978	904	1,179	1,003	896
Visvabrahman, Tamil	997	1,009	972	912	1,111	1,017	925
Do. Telugu ..	1,001	990	963	989	1,108	976	1,015
Yadava	1,030	1,026	988	872	1,152	1,066	994

v.—Births and Deaths by sex in 1901–10, 1911–20 and 1921–30.

Year.	Births. P.	Births. M.	Births. F.	Deaths. P.	Deaths. M.	Deaths. F.	Col. 3 *minus* Col. 4.	Col. 6 *minus* Col. 7.	Col. 2 *minus* Col. 5.	Female per 1,000 male Births.	Female per 1,000 male Deaths.
1	2	3	4	5	6	7	8	9	10	11	12
Total 1901–10 ..	***11,314,152***	***5,777,672***	***5,536,480***	***8,516,955***	***4,342,651***	***4,174,304***	***241,192***	***168,347***	***2,797,197***	***958***	***961***
1901	935,749	477,490	458,259	796,140	407,975	388,165	19,231	19,810	139,609	960	951
1902	1,023,146	521,745	501,401	732,437	373,355	359,082	20,344	14,273	290,709	961	962
1903	1,165,080	593,713	571,367	826,663	419,275	407,388	22,346	11,887	338,417	962	972
1904	1,125,751	573,819	551,932	824,278	419,825	404,453	21,887	15,372	301,473	962	963
1905	1,176,256	599,469	576,787	786,123	401,406	384,717	22,682	16,689	390,133	962	958
1906	1,125,978	575,074	550,904	998,391	507,823	490,568	24,170	17,255	127,587	958	966
1907	1,119,170	573,041	546,129	883,016	449,290	433,726	26,912	15,564	236,154	953	965
1908	1,192,136	610,268	581,868	960,919	491,062	469,857	28,400	21,205	231,217	954	957
1909	1,215,717	621,369	594,348	801,566	410,589	390,977	27,021	19,612	414,151	957	952
1910	1,235,169	631,684	603,485	907,422	462,051	445,371	28,199	16,680	327,747	955	964
Total 1911–20 ..	***12,261,503***	***6,269,011***	***5,992,492***	***10,261,057***	***5,185,077***	***5,075,980***	***276,519***	***109,097***	***2,000,446***	***956***	***979***
1911	1,226,488	627,274	599,214	933,510	476,449	457,061	28,060	19,388	292,978	955	959
1912	1,245,465	637,308	608,157	982,308	501,194	481,114	29,151	20,080	263,157	954	960
1913	1,288,618	658,416	630,202	856,651	435,991	420,660	28,214	15,331	431,967	957	965
1914	1,340,168	683,449	656,719	998,267	505,794	492,473	26,730	13,321	341,901	961	974
1915	1,249,434	638,440	610,994	879,950	445,466	434,484	27,446	10,982	369,484	957	975
1916	1,301,597	664,827	636,770	875,013	444,629	430,384	28,057	14,245	426,584	958	968
1917	1,295,078	661,581	633,497	1,049,545	532,512	517,033	28,084	15,479	245,533	958	971
1918	1,156,204	591,209	564,995	1,722,003	850,723	871,280	26,214	—20,557	—565,799	956	1,024
1919	1,021,213	523,544	497,669	1,089,829	550,605	539,224	25,875	11,381	— 68,616	951	979
1920	1,137,238	582,963	554,275	873,981	441,714	432,267	28,688	9,447	263,257	951	979
Total 1921–30 ..	***14,210,900***	***7,255,603***	***6,955,297***	***9,811,998***	***4,974,201***	***4,837,797***	***300,306***	***136,404***	***4,398,902***	***959***	***973***
1921	1,108,474	566,982	541,492	826,897	418,696	408,201	25,490	10,495	281,577	955	975
1922	1,231,722	629,246	602,476	859,236	436,743	422,493	26,770	14,250	372,486	958	967
1923	1,358,748	693,043	665,705	908,825	458,746	450,079	27,338	8,667	449,923	961	981
1924	1,430,858	730,223	700,635	1,006,043	510,956	495,087	29,588	15,869	424,815	960	969
1925	1,382,477	705,309	677,168	1,000,558	508,005	492,553	28,141	15,452	381,919	960	970
1926	1,480,293	753,383	726,910	1,048,529	530,173	518,356	26,473	11,817	431,764	965	978
1927	1,495,747	763,404	732,343	997,742	506,110	491,632	31,061	14,478	498,005	959	971
1928	1,534,445	783,928	750,517	1,080,744	549,565	531,179	33,411	18,386	453,701	957	967
1929	1,555,661	794,303	761,358	1,037,452	527,107	510,345	32,945	16,762	518,209	959	968
1930	1,632,475	835,782	796,693	1,045,972	528,100	517,872	39,089	10,228	586,503	953	981

vi.—Deaths by sex and age.

Age.	1925. M.	1925. F.	1926. M.	1926. F.	1927. M.	1927. F.	1928. M.	1928. F.	1929. M.	1929. F.	1930. M.	1930. F.	Total. M.	Total. F.	Female deaths per 1,000 male (Average).
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
0– 1 ..	134,336	115,817	149,753	130,799	141,375	120,998	153,050	129,620	151,130	128,949	163,757	139,367	893,401	765,550	857
1– 5 ..	78,545	78,544	85,806	85,809	73,731	73,418	82,979	83,222	83,912	84,036	80,232	80,961	485,205	485,980	1,002
5–10 ..	26,447	25,631	25,932	24,980	23,932	22,741	25,894	25,713	23,934	23,711	22,605	22,142	148,744	144,918	974
10–15 ..	15,066	13,978	14,444	13,231	13,938	13,245	15,099	14,108	13,197	12,659	11,675	11,299	83,419	78,520	941
15–20 ..	14,670	18,807	14,176	19,370	14,218	19,011	15,306	21,068	13,812	19,144	14,096	20,130	86,276	117,530	1,362
20–30 ..	34,013	43,878	32,987	45,643	33,083	44,588	36,215	50,629	32,820	45,321	31,669	46,047	200,787	276,106	1,375
30–40 ..	37,048	36,127	36,420	36,511	37,171	36,664	40,930	40,683	36,878	36,463	35,450	36,730	223,897	223,178	997
40–50 ..	37,782	29,939	37,924	29,844	38,145	30,702	42,031	32,288	38,208	30,280	37,346	30,173	231,436	183,226	792
50–60 ..	39,970	34,297	40,930	34,635	40,419	34,811	42,495	35,489	40,232	33,546	39,224	33,430	243,270	206,208	848
60 and over ..	90,128	95,535	91,801	97,534	90,098	95,454	95,566	98,359	92,984	96,236	92,046	97,593	552,623	580,711	1,051

FERTILITY TABLES.

I.—Sex of first born.

Natural division.	Females first born.	Males first born.	Females first born per 1,000 males first born.	* Slips examined.	Slips where no indication of the sex of first born is given.
1	2	3	4	5	6
East Coast, North	7,298	8,323	877	18,020	357
Deccan	1,598	1,748	914	3,713	70
East Coast, Central	4,618	5,175	892	10,609	17
East Coast, South	3,679	4,205	875	8,723	45
West Coast	669	798	838	1,593	6

* Slips in column 6 also included.

II.—Size of Families by occupation of husband.

Occupation of husband.	Families examined.	Children born.	Average per family.	Children surviving.	Proportion of surviving to thousand born.
1	2	3	4	5	6
1. (a) Agriculturists and ryots or associated occupations.	11,290	37,533	3·3	27,580	735
(b) Landlords	2,895	10,067	3·5	7,324	728
2. Artisans	4,547	15,084	3·3	10,679	707
3. Transport	1,702	5,531	3·2	3,975	719
4. General labourers	6,351	20,836	3·3	14,734	707
5. Professional and clerical ..	7,471	23,864	3·2	17,898	750
6. Instruction	1,971	5,972	3·0	4,516	756
7. Commerce	4,629	15,020	3·2	10,798	719
8. Army and Police	640	2,185	3·4	1,607	736
Miscellaneous or undetermined	1,162	4,298	3·7	2,972	692

III.—Average Size of Family correlated with age of wife at marriage.

Age of wife at marriage.	Number of families.	Number of children born.	Average observed.	Number of children surviving.	Average observed.
1	2	3	4	5	6
13–14	19,485	63,157	3·24	46,087	2·37
15–19	19,746	67,446	3·42	49,144	2·49
20–30	3,213	11,220	3·49	8,015	2·49
30 and over	214	731	3·42	452	2·11

IV.—Proportion of Fertile and Sterile Marriages.

Age of wife at marriage.	Duration of marriage years. 0–4. Fertile.	0–4. Sterile.	5–9. Fertile.	5–9. Sterile.	10–14. Fertile.	10–14. Sterile.	15 and over. Fertile.	15 and over. Sterile.
1	2	3	4	5	6	7	8	9
13–14	1,573	913	3,913	429	3,859	264	8,120	414
15–19	2,083	784	3,706	293	3,819	249	8,460	352
20–30	354	118	539	48	595	30	1,453	76
30 and over ..	54	19	30	8	25	4	68	6

CHAPTER VI.

CIVIL CONDITION.

Reference to statistics. THE tables with which this chapter is chiefly concerned are VII and VIII. The first shows civil condition by age-group and sex for districts and cities. In the second similar figures are given for certain selected communities by somewhat different age-groups. The subsidiary tables at the end of the chapter give ratio figures for civil condition by age, religion and natural division, while the last subsidiary table gives similar ratio figures for the selected communities.

Nature of the enquiry. 2. Instruction to enumerators followed the procedure of previous censuses. They were told to record each person's description of himself as he gave it. The principle followed was that where persons were accepted by the members of their community as regularly married, the needs of the census were satisfied and such persons were entered as married. Divorced persons were to be treated as widowed, a provision which occasionally gave rise to protest and once at least to scurrilous jest. It is well known that 'marriage' in India has a different and more varying connotation than in European countries, where a hard-and-fast line on the whole exists. All Indian marriage figures suffer from a confusion of the two systems, and it is essential in making deductions to bear in mind that the term 'civil condition' is much less applicable in India than in Europe. A girl of 5 or 6 who is married in India does not really differ at all in the conditions of her life from her coeval who remains unwed and any true sociological consideration would class the two together. For a correct comparison of eastern and western conditions, it would be necessary to alter the term 'marriage' to say 'consummated marriage'. Possibilities of obscurity and evasion are however obvious in such a procedure. Similar differences attach to the interpretation of the term 'widowed' for it is possible and happens in India that a widow may also be a maid, an identity almost impossible to western ideas.

Value of returns. 3. In India great importance attaches to the marriage condition and it is probable that the figures of marriage among females are greater than is actually the case, for many concubines, kept women, dancing girls and so on, try to pass themselves off to the enumerators under the guise of 'married'. A certain publicity attaches to the census enquiry in the Indian village and this is a considerable safeguard against such instances arising there. The fact that enumerators are almost invariably persons of local knowledge acts as a further safeguard. The uncertainty introduced is probably therefore inconsiderable but would tend on the whole to increase the tale of marriage. Among men the figures are not subject to this element of variation.

Marriage not a fixed term. 4. The old view was that the universality of marriage in India so often commented on had something about it not altogether respectable. A later view held that it was western and not Indian conditions that were abnormal in that artificial social and economic conditions had brought about an unnatural restraint on marriage. Both views are too general in statement, and the use of the word 'artificial' begs the question. Actually marriage like other essentially social phenomena is a function of times and conditions; family life is still a universal feature of the Indian scene and universal marriage is merely another expression for that; the departure from marriage is an equally true function of western conditions for it reflects the weakening of the family as the unit of social life. It is idle to talk of marriage as if it had some attribute of essential permanence and immutability; it has been and is a phenomenon as protean as life itself. Within this presidency alone the ceremonial considered necessary ranges from an almost incredible wealth of detail occupying days to an equally remarkable casualness, the one common circumstance arising

from the desire common to all mankind to make ceremony of any kind the excuse for a feast. The sanctity or irrevocability attached to the tie has an equally diversified range.

Much has been written about marriage. Every literature has treated of it and every religion tried to seize and keep control of it as an obvious source of power. Essentially marriage is a social and civil contract but the extent to which hierarchies the world over have assumed its control and regulation is one of its most marked aspects. In India, and in Madras especially, marriage has retained a greater freedom from priestly control than is realized. Brahmans officiate at marriages of their own and many other castes but there are large communities in the south of the province where no Brahman presence is required at all. In this as in many other ways the Tamil country retains signs of a social economy superior to or at least different from that which prevails farther north.

Effects of legislation. 5. Effects of legislation on marriage in the decade are mainly a feature of the Child Marriage Restraint Act to which reference has already been made and which is discussed at some length in Chapter XII. Proposals of considerable interest are afoot affecting the West Coast.

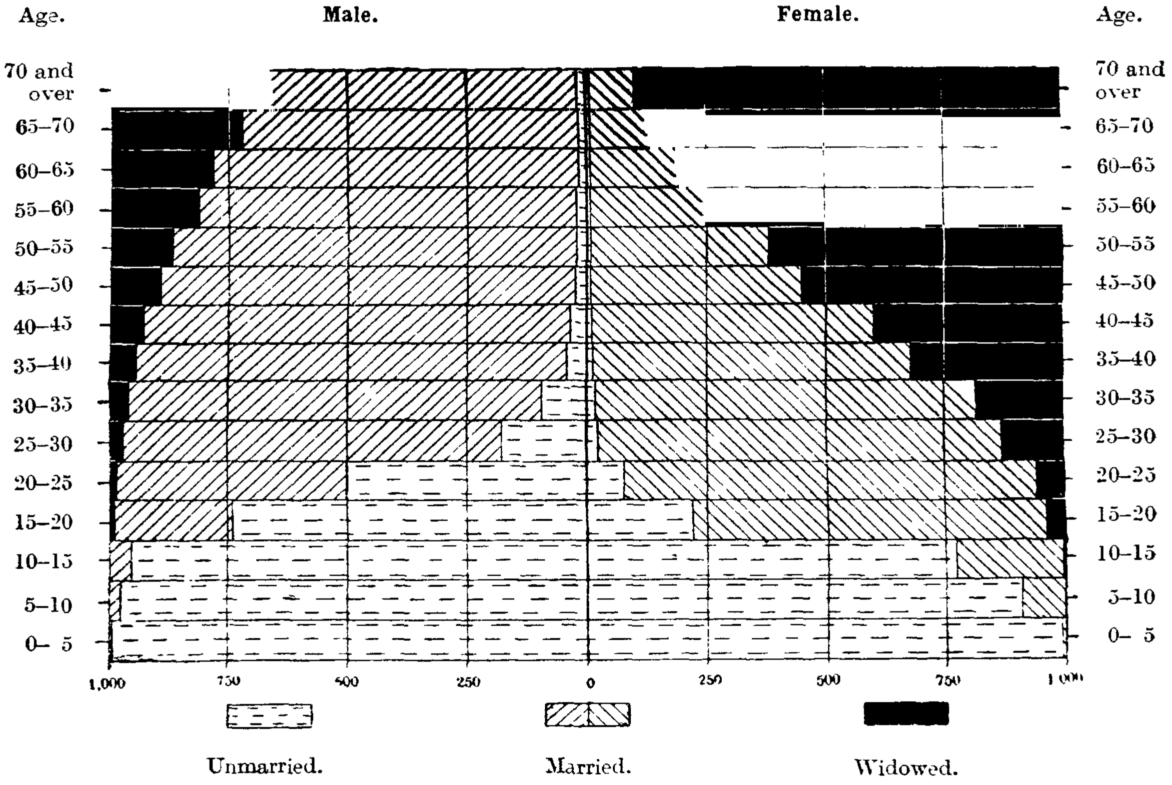
The West Coast has long been distinguished as regards civil condition by its peculiar system of sambandham. For some considerable time past the tendency has been for these sambandhams to approximate more and more to the nature of an ordinary marriage and in Travancore and Cochin States laws have been passed recognizing the sambandham as a legal marriage. A desire for similar recognition in Madras has found expression in two Bills which have been introduced in the Madras Legislative Council and referred there to Select Committees, the sanction of the Governor-General having been obtained for their introduction. The Bills have the same general object, but one is more thoroughgoing than the other. In the Statements of Objects and Reasons a full account is given of the movement for reform. The refusal of the courts to regard the sambandham as a legal marriage has in the words of the statement attached to Bill 13 of 1931 'stamped one of the most enlightened classes in this country as an inferior race and prevented it from growing to its fullest natural stature'. The tarwad is in fact no longer the focus of life in the marumakkattayam communities. They have expanded so much that it is often difficult to trace the exact relationship of the members. One result of this difficulty is extensive and often ruinous litigation. It is a significant fact that the Malabar district is more generously staffed with civil courts than any other in the presidency and has in fact two District Judges to itself. From this springs a prominent item in both Bills, namely, the legalizing of partition. No right of individual partition is proposed but the majority of a woman's tavazhi is to have the right to claim partition subject to certain conditions, e.g., that such claim can be preferred only after the death of lineal ascendants in the female line. The Bills make provision for adoption and, an important incident, the right to maintenance from the husband or father as the case may be. Formerly maintenance claims were against the tarwad, not against the natural parents. The important features of the suggested legislation may be summed up as (1) the recognition of the sambandham as a legal marriage, (2) the right of free divorce, (3) the enforcement of monogamy, (4) the right of wife and children to maintenance from husband or father, (5) the right of wife and children to inherit half the undisposed-of self-acquired property of husband or father, (6) the right of tavazhi partition. Other proposals are to enforce a stricter accountability on the karnavan and to restrict his powers. An interesting suggestion is to allow a tarwad to register itself as impartible. This is probably a concession to conservative opinion.

A notable instance of the application of the sambandham system was in the Nambudri practice whereby only the eldest son of a Nambudri Brahman married a Nambudri woman, the other sons being left to form sambandhams with women of other communities, the offspring of which belonged to the mother's caste. This custom like so many others had its origin in economic circumstances and enforced in effect a system of primogeniture and prevented the fragmentation of Nambudri holdings. On the other hand it obviously restricted the expansion of the community, and a growing feeling among the younger generation

was towards resentment of this limitation. A Nambudri Bill, therefore, No. 14 of 1931, has been introduced into the Madras Legislative Council of which the chief proposal, in section 6, is that 'every major male Nambudri Brahman is entitled to marry in his own caste and every such marriage shall be valid notwithstanding any rule of law, custom or usage prohibiting his marriage in his caste'. This is in effect a revolution in the Nambudri community. Section 9 of the Bill drives the nail further in, if possible, by proposing that every sambandham contracted by a Nambudri Brahman after the date on which this Act comes into force shall be void. This last suggestion is followed up by a penal section.

The Statement of Objects and Reasons sets forth in unmistakable language the resentment of the younger generation of Nambudris against their caste conditions. 'With the advent of democratic government in this country the numerical strength of the community has become a very important question. The Nambudris cannot hope to exercise any influence on the political life of the country unless their number is proportionate to their stake'. A sentence which forecasts the results of such a Bill becoming law is: 'When all or many marry within caste the present economic system cannot continue and so members are given the right to claim partition under certain conditions'. The break-up or the partial break-up of some of the large holdings is an almost inevitable consequence of such legislation becoming law.

Civil Condition of 1,000 of each sex at 5-year periods.



Age-group	Males.			Females.		
	Unmarried.	Married.	Widowed.	Unmarried.	Married.	Widowed.
0– 5 ..	997	3	0	988	12	0
5–10 ..	982	18	0	906	92	2
10–15 ..	958	41	1	769	224	7
15–20 ..	747	248	5	219	744	37
20–25 ..	510	478	12	79	859	62
25–30 ..	176	798	26	23	846	131
30–35 ..	93	872	35	18	797	185
35–40 ..	43	904	53	13	667	320
40–45 ..	34	898	68	11	590	399
45–50 ..	25	869	106	9	440	551
50–55 ..	22	847	131	8	374	618
55–60 ..	20	792	188	8	237	755
60–65 ..	19	763	218	7	187	806
65–70 ..	18	705	277	7	130	863
70 and over.	19	644	337	7	96	897

Civil condition by sex and age.

6. The diagram shows the civil condition of the sexes by age. The much greater proportion of widows among females is the first noteworthy point. Early marriage, to husbands much older, and the general discouragement of remarriage are cumulative in effect and produce inevitably a large proportion of widows. The ratio of widowers to male population differs little from European proportions; it is 4 per cent in Madras as against 3·6 in England and Wales. For widows, however, the proportions differ widely. 17·8 per cent of Madras women of all ages are widows; only 8·2 per cent of the women in England and Wales were widows in 1921. For women of 40 and over the respective figures are even more striking, namely, 61·8 per cent to 21·7. In other words, when middle age is reached, three-fifths of Madras women are widows as against one-fifth of women in England and Wales. In 1921 over 50 per cent of the women of England and Wales were spinsters. The Madras figure is 38. Again the male figures are much closer, 55 and 53. Thus the difference in civil conditions between Madras and western countries is essentially a matter affecting the female sex and illustration of differences can usefully be confined to that sex.

When we look at the diagram we see that already in age-group 5–10 almost one-tenth of Madras women are wed and between 10–15 the number rises to nearly one-fourth. The next five-year group shows the great marriage rush and by age 20 almost 80 per cent are married and a strong widowed element has already appeared. Between 20 and 25 the percentage gets over 90. For this same age period male marriage is barely 50 per cent of the age group, a striking illustration of the much later marriage age among men.

For males the marriage rush is greatest between 25 and 30; for females ten years earlier, between 15 and 20. For males the access of matrimony is evenly spread over the decade 20 to 30; for women the increase is almost four times greater in the single lustrum 15–20 than in any other.

Difference between sexes.

7. Subsidiary Table *ii* shows at a glance how the population is distributed among the three conditions of civil life adopted in these tables. Over half the men but less than two-fifths of the women are unattached. The proportions married are almost the same for both but the widows have four times the proportion of widowers. When community proportions are taken the Muslims show the largest proportion of bachelors and the Christians of spinsters. Hindu predominance in widows is pronounced. The tribal proportion returned as married is higher for both sexes than any other, an interesting fact and one in keeping with the simpler conditions of life obtaining in tribal areas. When age-period details are examined in the same table, the difference in social conditions is marked; while of 10,000 Hindu women aged 10–15 nearly a quarter are married or widowed, less than a fifth Muslim and less than a tenth Christian answer the same test. For males, differences are in the same direction but not nearly so pronounced.

Variations by age.

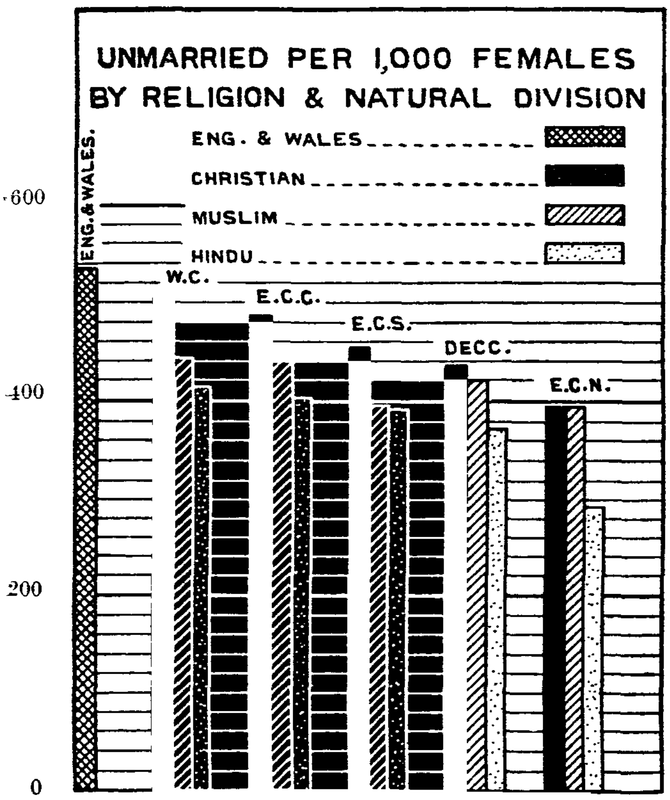
8. Women on the whole marry younger than men. In a combination of sex ratio and civil conditions by age, we should therefore expect the ratio among married people at all ages to depart not greatly from the general sex ratio of the presidency, while for unmarried it would be less and that for widowed more. This is borne out by Subsidiary Table *iv* for all and for the component religions. In a community practising child marriage these tendencies should be enhanced and this also is observed. In the middle ages of life the ratio among married should again approach the normal sex ratio but among unmarried the decrease should be as marked as an increase among widowed. At the later stages of life the unmarried ratio might be expected to recover a little because those who are unwed at advanced ages are generally so from particular individual reasons, not from social custom. At the advanced ages, widows should greatly outnumber widowers, a compensation appearing in the central column for married. All these tendencies receive illustration in the

subsidiary table. The principle of this table of relating females to 1,000 males produces odd results in cases where the items are very few and some entries seem much more imposing than they are. There are four blanks in the table which indicate a zero divisor and a consequent ratio of infinity. For the sake of uniformity, the main communities are represented but it would effectively be better in all ratio calculations to omit mention of any cases totalling less than the ratio base.

The Christian ratio among the unmarried remains consistently highest in all natural divisions, indicating the later marriage among women prevailing in this community.

Regional variation.

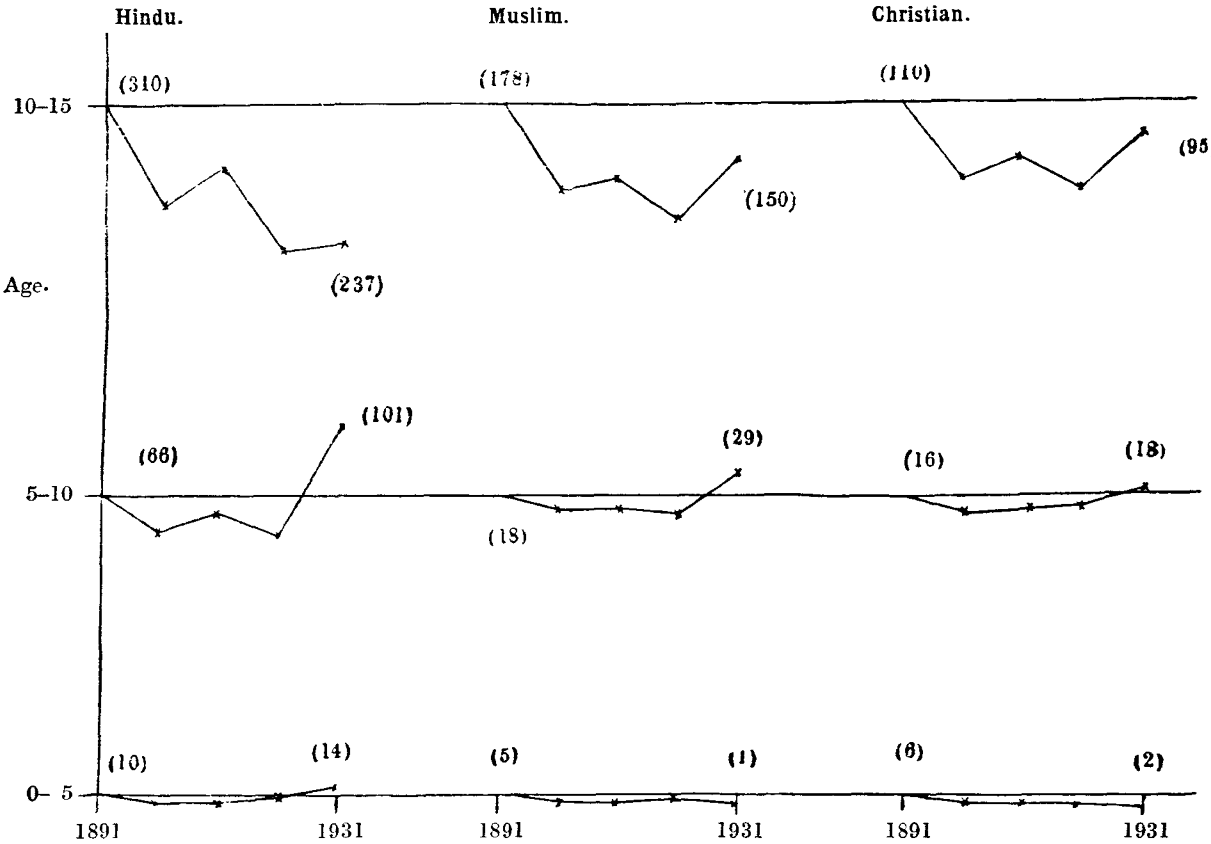
9. The diagram is designed to show regional variations in female addiction to matrimony. The West Coast shows the largest proportion of spinsters for every religion, its lead being greatest for Christians and least for Muslims. Christianity is of much longer standing in this region than elsewhere in the province and its customs have taken strongest root. Muslims here are mostly of the lower strata of the population, closely connected with the Hindu Cherumans and similar castes ; even so their unmarried quota definitely exceeds the Hindus', though it differs little from the Muslim rate in the East Coast Central.



Variation by religion.

Figures in the East Coast Central for Christians at least are probably unduly influenced by the concentration in this division of the great majority of the province's Europeans and Anglo-Indians. For Hindus and Muslims however its claim to second place is undoubted. East Coast South makes a good third for Christians, not so good for the others. Here again is an area (Tinnevelly) where Christianity is of comparatively long standing, an established feature of the region, and its customs of later marriage and greater female independence have taken firmer root. The Muslim and Hindu rates are practically identical here, an interesting confirmation of the closer Hindu connection in social customs that is generally observed among the south Tamil Muslims, the great majority of whom are of Hindu extraction and retain Tamil as their mothertongue. The Deccan figures mark the change in character of Islam. The unmarried quota is above that of south Tamil Muslims and little below that of the Christians. In the East Coast North, Muslim and Christian are equal but well below their Deccan figures while the Hindu quota drops by a fourth. In the Deccan, Christianity is a feature of more recent growth and in the East Coast North is to a considerable extent a thing of the last decade ; the smaller proportion of spinsters shows its more recent growth from conversion and consequently greater approximation to Hindu standards. Even so, its superiority over the Hindu is greater here than in any other area. The low Hindu quota in this division is to some extent exaggerated by a rush of marriages within the decade but even allowing for this it is plain that the Circars Hindus are as elsewhere stated, the least advanced of their co-religionaries in regard to female marriage.

Proportion married of 1,000 females at certain ages—1891-1931.



Variation by age-period 1891-1931.

10. The diagram illustrates by communities the proportion of females married at certain age-periods. There is no vertical gradation by actual values ; what it is wished to illustrate is the movement of the ratio during the 40 years. Every corresponding curve starts from the same level, beginning and end values being shown in brackets. The figures for the age-group 0-5 show for Muhammadans and Christians a continuous tendency to decrease. The corresponding Hindu curve on the other hand after dropping from 1891 rose over 1911-21 and the rise has continued at this census with the result that this ratio now recorded is the highest of all the series. Fourteen out of every 1,000 Hindu girls aged 0-5 are returned as married. The curves for the next age-group are similar in that the 1921 proportion is in every case above that for 1891 the increase being however very slight for Christians. Movements between these terms are not dissimilar but are more violent for Hindus and Muhammadans than for Christians. In each of the two former the 1931 proportion is over 50 per cent higher than that of 1891. The general tendency of the 10-15 curves is on the other hand downwards and again the general shapes bear a close resemblance. In each case the ratio has risen at this census from that of 1921, the rise being most marked in the case of the Christians where it is 33 per cent ; for Muhammadans it is 25 per cent and for Hindus less than 2 per cent.

The plumping for favourite digits discussed in chapter IV inevitably causes similar aggregations for civil condition and affects the returns for this when considered by age-group. A further source of possible vagary is the mode by which the age-groups themselves were built up, adopted at the request of the Government of India actuary. According to this, the original sorting was into the alternate groups of 3 and 7 years given in Subsidiary Table *v* ; from these the five-year groups in the main table were formed by adding halves ; thus half of group 4-6 plus half of 7-13 gave group 5-10. If civil condition is not evenly distributed over the 3 and 7 year periods, the transference of these halves may affect the civil condition aspects of the 5-year groups. With returned ages mere approximations any such effect can ordinarily have little real importance and only where civil condition is changing markedly with years of age need it be considered, e.g., the group 7-13 for females. The numbers of girls shown for group 5-10 as married may be rather greater than would have resulted from an actual sort of these years. The totals for the original sorting groups will be found at the end of the chapter.

The importance of this circumstance should not be exaggerated. Thousands of child marriages were a feature of the six months grace before the Sarda Act and some part of the observed increase is certainly due to this. In any case under present conditions of Indian age determination no distribution of civil condition by age could ever give absolute values at all or anything more than general dimensions. The possible effects of age-group composition thus fall into correct proportion. Finally, since the method applies to all religions and all communities any effects it has are common to all; comparisons therefore are as valid as ever and here, as always where data are not absolute, have a greater illustrative value than the original figures from which they spring.

11. The table below sums up the history of female marriage rates for ages 0–15 over the past four censuses.

Per 1,000 females aged 0–15.

	Hindus. M.	Hindus. W.	Muslims. M.	Muslims. W.	Christians. M.	Christians. W.
1901 ..	92	3	44	2	25	1
1911 ..	101	3	46	2	28	1
1921 ..	91	4	40	2	25	1
1931 ..	108	3	55	2	35	1

M = Married. W = Widowed.

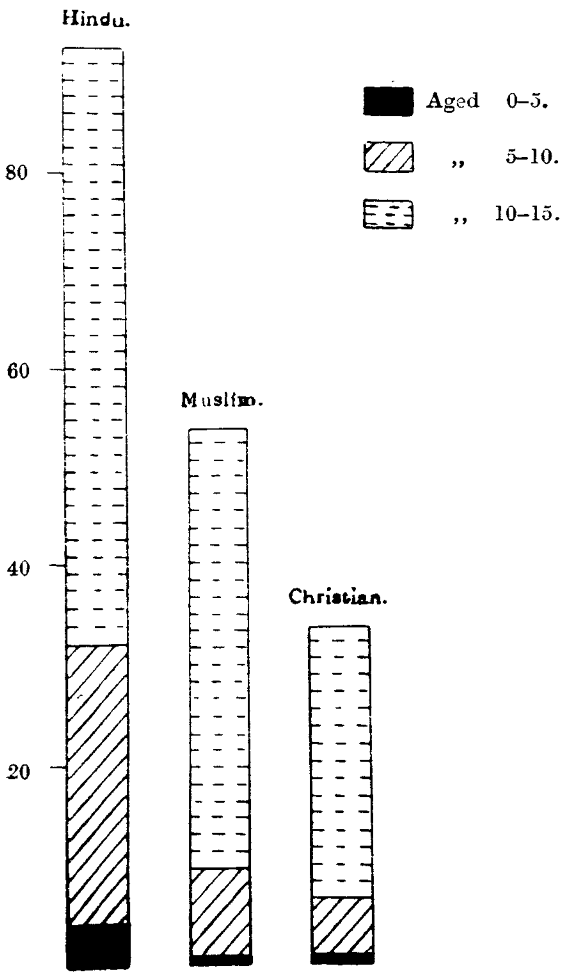
The relative proportions have not changed greatly, but the tendency is distinct for the Christian and Muslim quotas to rise relatively to the Hindu. The ratio H : M : C in 1901 was 100 : 47·8 : 27·2. In 1931 it is 100 : 50·9 : 32·4. The Christian rise is more pronounced and but for a slight drop in 1921, has been unbroken. This reflects again conversion activities at least to some extent. The general fall in 1921 should be related to the actual decrease in the numbers of persons aged 0–10 recorded at that census as compared with 1921.

Child marriage.

12. The small table in the margin (illustrated by the diagram) treats of the female marriage question from another aspect. Out of 1,000 married women of each community the proportion at the three lowest age-groups is considerably greater for Hindus than for Muslims, and again for Muslims than for Christians, with the single exception that a slightly larger proportion of Christian wives is aged 0–5 than Muslims. Similar figures for the fourth quinquennium are also given. In this it will be noticed that the Muslim and Christian elements have respectively overtaken and closely approached the Hindu.

Female Child Marriage.

Proportion per 1,000 wives.



1,000 married females.

Age-group.	Hindu.	Muslim.	Christian.
0– 5 ..	4	1	1
5–10 ..	28	9	6
10–15 ..	59	44	27
15–20 ..	153	170	143

Regional predominance.

13. As already indicated the proportion of very young girls married has risen from last census. Subsidiary Table *ii* enables us to discover the chief contributor to the rise, viz., the East Coast North division. While the proportion of girls aged 0–5 married has fallen in all communities in all other natural divisions, it has more than doubled itself in the East Coast North. Within this division the proportion of girls at this age returned as married has risen in every community. The Muslim and Christian elements are so small however as to be completely overshadowed by the Hindu contribution,

a remark which applies to practically any general consideration affecting the province. In 1921, 21 Hindu girls in this division out of 1,000 aged 0–5 were returned as married. In 1931 the figure was 47. The small table shows the variation in district figures which here as so often is masked by the artificial grouping into so-called natural divisions.

Hindu Girls married per 1,000.

	Age-group 0–5.	Age-group 5–10.
Vizagapatam Plains	111	442
East Godavari Plains	104	193
Guntur	103	167
Ganjam Plains	98	416
West Godavari	87	177
Kistna	57	145
Nellore	24	86
Vizagapatam Agency	13	77
Ganjam Agency	8	416
East Godavari Agency ..	4	96

Vizagapatam and Ganjam plains stand out at once in the extreme north as the home of conservatism. The presence of Guntur's high figure between the comparatively low Kistna and the low Nellore is surprising. It has been left to the lowly district of Nellore with the assistance of the Agencies to reduce the child marriage proportion for this natural division to even the high figure of 47. Now we see where the centre of attachment to the child marriage system in the presidency lies. Once again, it is the northern areas that are revealed as the home of obscurantism. It is a significant commentary that it was from one of these Telugu delta districts that an application came to use census schedules in a prosecution under the Sarda Act.

The same region and the same contributors cause the married quota of girls aged 5–10 also to be much greater in this natural division than in any other. The Muslim and Christian figures in the same division have also increased considerably. Two hundred and sixty-eight out of 1,000 Hindu girls aged 5–10 in the East Coast North division are married. The district figures are given above. In contradistinction to the lower age-group, the proportions at ages 5–10 of married girls has increased throughout the presidency. In the Deccan, all communities' ratios are up by 100 per cent or more. The same applies to the East Coast Central except for Christians where the ratio has actually fallen. The increase while prominent is very much less in the East Coast South and in the case of the Christians the decrease here is marked. In the West Coast all rates except that for Christians have increased by 200 per cent; the Christian ratio has decreased enormously. Thus where Christianity has a definite hold on the population, and its numbers are appreciable, its connection with child marriage stands in bold contrast to that in other communities. An interesting point is that on the West Coast where Muhammadans are strongest, the proportion of girls aged 5–10 married is 7 times greater in 1931 than in 1921. The sum total is indicated in the provincial figures in the subsidiary tables which show that the proportion of married girls at this age has risen from 5 per 1,000 to 92.

At 10–15 the proportions are also higher than for 1921 but the differences on the whole are slight. The increase is again most marked in the East Coast North division and Christians and Muhammadans show the greatest percentage increase in this age-period, the Hindu figure remaining practically the same. The most pronounced regional variations are in the Agency tracts. The Hindu proportion of marriage has risen in the East Coast North division for this age-period but has fallen in all the others except the West Coast. The same applies to the Muslim figures which have uniformly risen except in that area. The rise in the Christian proportion is significantly most marked in the regions where Christians are smallest in numbers.

Child marriage—District rates.

14. In the small table below the districts are set in order of abstention from infant marriage

Ratio of Hindu Girls 0–5 married, to 1,000 female population,

Pudukkottai	0·00	Madura	1·12	Bellary	6·60
Malabar	0·14	Nilgiris	1·14	Ganjam Agency ..	8·00
Tanjore	0·41	Chingleput ..	1·40	Vizagapatam Agency	13·00
South Arcot ..	0·42	North Arcot ..	1·76	Nellore	24·00
Ramnad	0·44	Chittoor	1·87	Kistna	57·00
Coimbatore ..	0·56	Anantapur ..	2·00	West Godavari ..	87·00
Tinnevelly ..	0·60	Cuddapah ..	3·35	Ganjam Plains ..	98·00
Trichinopoly ..	0 68	South Kanara ..	3·48	Guntur	103·00
Salem	0·87	East Godavari Agency	4·00	East Godavari Plains	104·00
Madras	1·00	Kurnool	4·80	Vizagapatam Plains	111·00

Pudukkottai's total population is small as compared with ordinary districts but nevertheless the complete absence of any marriage below 5 years entitles it to first place. Malabar is a very good second and the southern Tamil districts with the exception of Madura all occupy creditable places with less than 1 per 1,000. Madura's figure is just over 1. As the Telugu border is approached the proportion rises, to reach its maximum in Vizagapatam Plains. Though the figures in this table relate solely to Hindus the Agencies reflect the essential conditions of the tracts and the large infusion of primitive tribes among 'Hindus', by a lower proportion of child marriage than in the adjoining plains areas.

Education and child marriage.

15. An examination of the districts in order of literacy shows that of the first ten districts in the list in paragraph 14, eight appear in the first ten by male literacy order. The last place would be held (apart from the Agencies) firmly by the same district, Vizagapatam Plains, but there would be little marked correspondence at this end and the Telugu delta districts have a much higher place in literacy than in the child marriage table. If female literacy is considered, the leading group is much the same but the disparity between the Telugu deltas in the two tables becomes even more marked. Kistna and West Godavari are 4th and 5th and East Godavari 7th in female literacy, in marked contrast with their low place in the child marriage table.

Broadly speaking, the better educated regions tend to be less disposed to child marriage; there are too many exceptions for anything more positive to be ventured. The Telugu deltas form one, Salem another, a district comparatively lowly in literacy but well up as regards child marriage. Clearly, education is not the only factor; caste custom enters too and the traditions of the south and west are on the whole against, while those of the north favour, child marriage.

Caste illustration.

16. That infant marriage is a Telugu and Oriya phenomenon and among the Telugus essentially a circars phenomenon is indicated from another aspect by Subsidiary Table *iv*. The pronounced contrast between items 1 and 2 in the marriage proportion of girls under 6 bears it out; the Telugu section of depressed classes has 30 times the proportion of the Tamil. Similar differences will be noticed in lines 8–12 which deal with Brahmans; the highest is the Telugu, the next the Oriya, both far above any other. The next pair with a high proportion are respectively an Oriya and a Telugu caste, Dandasi and Golla, while the most remarkable figure of all is returned by the characteristic caste of South Ganjam, the Kalingi, over a third of whose girls below six are wed. The Kalingis thus retain and have in fact strengthened a pre-eminence which has been theirs for some decades. The karnam caste of Ganjam-Vizagapatam comes second with 142 per 1,000. The Toda high figure comes from a total population of only 600 and the peculiar customs of this tribe render its figure less indicative of true conditions. Another interesting comparison is between items 40 and 41; again the Telugu section of this widespread community returns a vastly higher proportion of infant brides.

Imperial Table VIII shows the communities in order of prevalence of child marriage in order to give effective illustration to this feature. The age taken for this table is 0–13. It is significant that the first four places are supplied by castes predominant in Ganjam and Vizagapatam and that the fifth place is occupied by the Telugu Brahman. The first Tamil item to appear is No. 8 and even that is not an absolute example, for the term Panchama is rather generic than specific. The first indubitable Tamil section to appear in the list is No. 19 and we have to go so far as No. 27 for the next. Omitting the Anglo-Indians, whose conditions of life are widely different, Maravans, a Tamil caste occupy the last place, with the Nayars, the typical West Coast community, immediately above them.

17. It was shown in Chapter IV that East Coast North was the only division in which the mean age had not decreased considerably and even there the exceptional behaviour was confined to females. It is hazarding too much to connect this with the fact that the Circars are the home of child marriage, but the coincidence is worth mentioning. Exhaustive and accurate specific deathrates would be required to investigate this.

Caste variations 1921–31.

18. The information in Subsidiary Table *v* was extracted for rather different age-groups at this census and the selection of castes is not identical. Sufficient material exists however for certain limited comparisons. The first age-group in 1921 was 0–5 against the present 0–6. Clearly if a greater quota at the

lowest age-group appears at this census, deduction of real increase cannot safely be made unless the rise is so pronounced as to go beyond the contribution of the extra year. If on the other hand the 1931 figure is smaller, a decreased addiction to child marriage can be declared, for we have then a larger quota coming from the first five years of life than from the first six, ten years later. Subject to these cautions the figures in the margin can be scrutinized. In the Malayalam Brahmans a zero quota is repeated while the figures for Cherumans and Aryavaisyas are too close to justify comment.

Caste.	*Married girls per 1,000 lowest age-group.* 1921.	1931.
Brahman, Tamil	15	2
Do. Telugu	6	20
Do. Oriya	8	15
Kalingi	160	353
Kalinji	19	74
Mala	5	26
Visvabrahman, Tamil	2	1
Do. Telugu ..	35	55
Paraiyan	7	1
Holeya	4	1

The first noteworthy point in the table is the severance between Tamil and Telugu *cum* Oriya, between south and north. The Tamil caste figures have without exception gone down, the Telugu and Oriya equally without exception gone up in such proportions as to make a positive increase of child marriage a clear deduction. The more than doubling of the Kalingis' enormous 1921 figure throws into vivid relief the degree to which this south Ganjam community represents extreme addiction to the very early marriage of girls. Its north Ganjam parallel has quadrupled its figure. The Tamil-Telugu comparison finds illustration in the Paraiyan-Mala figures. They had much the same figure in 1921, the advantage being with the Telugu class. The Tamil depressed class has diminished its quota to almost zero, its Telugu parallel has increased its quota fivefold. So the divergence in behaviour is regional, not social.

Widows. 19. The province has 78 widowed who are less than one year of age, 31 boys and 47 girls. All but a single child widow from South Kanara come from the Telugu districts and Ganjam, and 48 from the two plains districts of the extreme north in the ratio 14 : 34 between Ganjam and Vizagapatam. The other Telugu districts contribute one or two each, the maximum contribution being three. These few facts throw into marked relief the pre-eminence of the two districts in the matter of infant marriage. The infant widowers will marry again ; the demise of their unknown brides is hardly even an unfortunate incident. It is otherwise with the widows ; though Hindu opinion is beginning to countenance remarriage of virgin widows, it could scarce be said to be the rule and the chances are that some of the 46 will grow up and remain widows. So for the 1,200 more who are between 1 and 5 and of whom 68 per cent hail from the Northern Circars.

The stigma attached to widowhood cannot be said to have lightened appreciably in Madras during the decade. One widow when approached by the census enumerator said to him : 'I am a widow, surely you do not count me ? ' Whether she spoke in true resignation or in sarcasm and resentment it is unfortunately impossible to say. Her remark however is indicative of the general position. Widow remarriages remain as isolated excrescences on Hindu life. The mere fact that a widow remarriage can still command a paragraph and a small heading in a newspaper shows how far removed the circumstance is from ordinary acceptance. It is probable that remarriage of infant widows is practised and is increasing. What happens in such cases is that by tacit consent no reference is made to the fact that the bride is a widow at all. As regards adult widows, however, the position remains in effect unchanged, and all the activities of the Arya Samaj have yet to produce any general awakening. There are several castes in which widow remarriage is permitted. But even yet, the tendency is marked for a caste which has risen in the world to tend to assert its ascent by looking more coldly upon or even forbidding remarriage of widows. This is on a par with the tendency in the Northern Circars for a caste which has progressed in social standing to emphasize the process by making its women adopt purdah.

There are however signs, at least among males, of a diminishing acceptance of marriage as the chief end of man and the Brahman who told me he did not wish to be troubled with such things 'while still a boy '—his age was 25—probably shocked his parents and would certainly have shocked his grandparents but voiced an opinion that is growing in favour, although perhaps slowly, among his kind.

i.—Distribution by civil condition of 1,000 of each sex, religion and age.

Religion.	Sex and age.	Unmarried. 1931.	1921.	1911	1901.	1891.	Married. 1931.	1921.	1911.	1901.	1891.	Widowed. 1931.	1921.	1911.	1901.	1891.
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*
All Religions	**Males** ..	***527***	***531***	***533***	***552***	***539***	***433***	***425***	***428***	***409***	***427***	***40***	***44***	***39***	***39***	***34***
	0–5 ..	997	997	998	998	996	3	3	2	2	4	..	..	..	..	..
	5–10 ..	982	990	991	993	991	18	10	9	7	9	..	..	..	..	..
	10–15 ..	958	968	962	967	961	41	31	37	32	38	1	1	1	1	1
	15–20 ..	747	865	849	867	842	248	132	148	130	155	5	3	3	3	3
	20–40 ..	220	246	237	255	244	750	720	736	715	734	30	34	27	30	22
	40–60 ..	26	27	30	30	27	863	866	876	872	885	111	107	94	98	88
	60 and over.	19	21	20	18	17	712	725	732	733	736	269	254	248	249	247
	Females.	***377***	***373***	***373***	***390***	***372***	***445***	***438***	***441***	***419***	***436***	***178***	***189***	***186***	***191***	***192***
	0–5 ..	988	991	994	994	990	12	8	6	6	9	..	1	..	..	1
	5–10 ..	906	955	946	955	937	92	42	52	44	61	2	3	2	1	2
	10–15 ..	769	772	740	759	696	224	218	252	233	294	7	10	8	8	10
	15–20 ..	219	280	271	286	225	744	685	697	681	745	37	35	32	33	30
	20–40 ..	37	29	31	28	31	805	820	828	820	821	158	151	141	152	148
	40–60 ..	9	10	10	12	17	444	480	479	451	434	547	510	511	537	549
	60 and over.	7	8	7	9	12	145	154	137	113	107	848	838	856	878	881
Hindu.	**Males** ..	***521***	***527***	***528***	***548***	***535***	***438***	***428***	***432***	***412***	***430***	***41***	***45***	***40***	***40***	***35***
	0–5 ..	997	997	998	998	996	3	3	2	2	4	..	..	..	..	..
	5–10 ..	980	990	990	992	991	20	10	10	8	9	..	..	..	..	..
	10–15 ..	955	966	958	965	958	44	33	41	34	41	1	1	1	1	1
	15–20 ..	738	857	842	859	836	257	140	155	138	161	5	3	3	3	3
	20–40 ..	216	244	235	253	242	753	722	739	717	735	31	34	26	30	23
	40–60 ..	27	27	31	30	28	859	864	873	870	883	114	109	96	100	89
	60 and over.	19	21	21	18	17	708	722	728	730	732	273	257	251	252	251
	Females.	***370***	***366***	***366***	***383***	***367***	***448***	***441***	***445***	***422***	***438***	***182***	***193***	***189***	***195***	***195***
	0–5 ..	986	991	994	994	990	14	8	6	6	10	..	1	..	..	..
	5–10 ..	896	952	941	950	932	101	46	57	48	66	3	2	2	2	2
	10–15 ..	756	756	723	743	679	237	234	268	248	310	7	10	9	9	11
	15–20 ..	208	265	262	276	219	754	699	705	690	750	38	36	33	34	31
	20–40 ..	34	26	29	26	30	804	820	827	819	819	162	154	144	155	151
	40–60 ..	9	9	10	11	16	440	476	476	448	431	551	515	514	541	553
	60 and over.	7	8	7	8	12	142	150	135	112	106	851	842	858	880	882
Muslim.	**Males** ..	***583***	***579***	***592***	***598***	***582***	***389***	***387***	***388***	***373***	***394***	***28***	***34***	***30***	***29***	***24***
	0–5 ..	999	999	999	999	997	1	1	1	1	3	..	..	..	..	..
	5–10 ..	996	997	997	997	997	4	3	3	3	3	..	..	..	..	..
	10–15 ..	990	990	989	989	990	10	10	11	11	10	..	..	..	..	..
	15–20 ..	833	933	918	934	918	162	64	78	64	81	5	3	4	2	1
	20–40 ..	260	280	271	286	272	714	687	700	686	711	26	33	29	28	17
	40–60 ..	22	23	23	25	26	901	898	905	901	914	77	79	72	74	60
	60 and over.	17	19	16	22	21	767	768	776	777	786	216	213	208	201	193
	Females.	***426***	***417***	***412***	***428***	***412***	***415***	***413***	***413***	***398***	***416***	***159***	***170***	***175***	***174***	***172***
	0–5 ..	999	997	998	998	995	1	3	2	2	5	..	..	..	..	..
	5–10 ..	970	990	987	987	981	29	9	12	12	18	1	1	1	1	1
	10–15 ..	845	877	855	861	818	150	119	140	135	178	5	4	5	4	4
	15–20 ..	260	317	268	286	233	703	650	693	681	746	37	33	39	33	21
	20–40 ..	42	35	26	36	43	809	822	830	821	831	149	143	144	143	126
	40–60 ..	10	11	8	20	32	443	470	458	440	433	547	519	534	540	535
	60 and over.	8	9	5	19	26	141	141	125	107	103	851	850	870	874	871
Christian.	**Males** ..	***556***	***552***	***561***	***584***	***564***	***408***	***405***	***407***	***385***	***407***	***36***	***43***	***32***	***31***	***29***
	0–5 ..	998	998	998	998	996	2	2	2	2	3	..	..	..	..	..
	5–10 ..	994	994	997	997	995	6	6	3	3	4	..	..	..	..	..
	10–15 ..	988	984	989	991	990	12	16	11	9	10	..	..	..	..	..
	15–20 ..	817	930	923	938	908	179	68	76	61	90	4	2	1	1	2
	20–40 ..	239	251	245	261	227	737	717	735	716	754	24	32	20	23	19
	40–60 ..	27	17	28	24	21	873	869	890	894	907	100	104	82	82	72
	60 and over.	21	21	19	17	14	711	713	746	752	753	268	266	235	231	233
	Females.	***450***	***451***	***446***	***462***	***440***	***414***	***414***	***411***	***390***	***408***	***136***	***135***	***143***	***148***	***152***
	0–5 ..	998	997	997	997	993	2	3	3	3	6	..	..	..	..	1
	5–10 ..	981	989	991	991	983	18	10	9	8	16	1	1	..	1	1
	10–15 ..	903	930	915	926	887	95	67	83	71	110	2	3	2	3	3
	15–20 ..	369	474	439	468	374	611	512	549	518	612	20	14	12	14	14
	20–40 ..	78	66	63	53	47	807	831	836	837	845	115	103	101	110	108
	40–60 ..	25	26	22	19	17	513	562	541	514	490	462	412	437	467	493
	60 and over.	20	20	16	16	12	212	240	170	142	138	768	740	814	842	850

i.—Distribution by civil condition of 1,000 of each sex, religion and age—cont.

Religion.	Sex and age.	Unmarried.					Married.					Widowed.				
		1931.	1921.	1911.	1901.	1891.	1931.	1921.	1911.	1901.	1891.	1931.	1921.	1911.	1901.	1891.
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*
Tribal	**Males ..**	***502***	***526***	***540***	***545***	***524***	***462***	***432***	***424***	***415***	***436***	***36***	***42***	***36***	***40***	***40***
	0–5 ..	993	993	997	996	991	7	7	3	4	9	..	..	..	..	..
	5–10 ..	983	989	991	992	984	17	10	9	8	16	..	1	..	..	..
	10–15 ..	955	971	970	975	952	44	27	29	24	47	1	2	1	1	1
	15–20 ..	669	851	826	865	668	319	141	168	129	310	12	8	6	6	22
	20–40 ..	146	214	206	221	195	816	738	758	737	761	38	48	36	42	44
	40–60 ..	21	27	29	23	22	881	874	874	868	862	98	99	97	109	116
	60 and over.	21	26	23	23	13	747	750	751	723	706	232	224	226	254	281
	Females.	***431***	***436***	***453***	***455***	***450***	***463***	***438***	***444***	***432***	***457***	***106***	***126***	***103***	***113***	***93***
	0–5 ..	991	964	995	993	988	9	7	5	7	12	..	29	..	..	..
	5–10 ..	962	960	985	983	979	36	14	14	16	20	2	26	1	1	1
	10–15 ..	853	904	894	912	847	142	86	103	84	148	5	10	3	4	5
	15–20 ..	307	489	446	503	405	669	486	537	479	568	24	25	17	18	27
	20–40 ..	56	64	60	54	50	851	829	860	862	885	93	107	80	84	65
	40–60 ..	17	18	18	15	13	578	575	609	550	634	405	407	373	435	353
	60 and over.	18	21	13	17	12	274	313	288	193	246	708	666	699	790	742
Jain	**Males ..**	***514***	***517***	***515***	***527***	***526***	***429***	***414***	***420***	***413***	***416***	***57***	***69***	***65***	***60***	***58***
	0–5 ..	999	995	997	999	998	1	5	3	1	1	..	..	..	..	1
	5–10 ..	991	992	995	994	992	9	7	5	5	4	..	1	..	1	4
	10–15 ..	987	979	984	985	982	13	20	15	14	15	..	1	1	1	3
	15–20 ..	811	919	920	934	916	184	77	80	66	83	5	4	..	..	1
	20–40 ..	337	374	369	381	374	627	577	588	579	591	36	49	43	40	35
	40–60 ..	79	82	75	63	62	779	765	783	806	802	142	153	142	131	136
	60 and over.	37	49	32	44	44	659	660	677	691	687	304	291	291	265	269
	Females.	***319***	***298***	***307***	***307***	***301***	***443***	***437***	***431***	***424***	***425***	***238***	***265***	***262***	***269***	***274***
	0–5 ..	996	986	994	994	992	3	6	6	6	7	1	8	..	..	1
	5–10 ..	947	969	976	971	957	52	18	22	27	39	1	13	2	2	4
	10–15 ..	796	750	774	733	704	201	234	222	262	291	3	16	4	5	5
	15–20 ..	166	206	175	165	150	798	748	796	805	812	36	46	29	30	38
	20–40 ..	25	23	15	13	16	802	781	798	801	774	173	196	187	186	210
	40–60 ..	7	13	5	7	11	377	410	414	393	366	616	577	581	600	623
	60 and over.	2	17	2	1	7	92	113	77	57	72	906	870	921	942	921

ii.—Distribution by civil condition of 1,000 of each sex and age by natural division and religion.

MALES.

Natural division and religion.	All ages U.	All ages M.	All ages W.	0-5. U.	0-5. M.	0-5. W	5-10. U.	5-10. M.	5-10. W.	10-15. U.	10-15. M.	10-15. W.	15-40. U.	15-40. M.	15-40. W.	40 and over. U.	40 and over. M.	40 and over. W.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Province																		
All Religions	527	433	40	997	3	..	982	18	..	958	41	1	335	640	25	25	829	146
Hindu	521	438	41	997	3	..	980	20	..	955	44	1	330	645	25	25	826	149
Muslim	583	389	28	999	1	..	996	4	..	990	10	..	394	585	21	21	871	108
Christian ..	556	408	36	998	2	..	994	6	..	988	12	..	370	610	20	26	835	139
Agency																		
All Religions ..	497	467	36	993	7	..	983	17	..	952	46	2	232	734	34	20	858	122
Hindu	495	468	37	993	7	..	981	19	..	950	49	1	229	736	35	20	856	124
Tribal	505	461	34	994	6	..	987	13	..	961	38	1	242	726	32	21	862	117
Christian ..	518	457	25	995	5	..	990	10	..	975	24	1	231	745	24	16	893	91
East Coast North																		
All Religions ..	468	494	38	991	9	..	940	59	1	876	122	2	236	742	22	19	841	140
Hindu	464	498	38	990	10	..	936	63	1	868	130	2	230	748	22	19	841	140
Muslim	543	423	34	997	3	..	987	13	..	972	28	..	347	636	17	22	843	135
Christian ..	508	450	42	994	6	..	984	15	1	970	29	1	287	688	25	19	823	158
Deccan																		
All Religions ..	546	394	60	999	1	..	993	7	..	979	20	1	377	587	36	49	730	221
Hindu	514	393	63	999	1	..	992	7	1	977	22	1	379	583	38	52	719	229
Muslim	560	396	44	999	1	..	996	4	..	989	11	..	368	604	28	29	801	170
Christian ..	554	401	45	999	1	..	996	4	..	992	8	..	348	622	30	28	796	176
East Coast Central																		
All Religions ..	515	417	38	1,000	..	..	997	3	..	989	11	..	367	612	21	26	831	143
Hindu	542	419	39	1,000	..	..	997	3	..	989	11	..	363	616	21	26	829	145
Muslim	578	399	23	999	1	..	997	3	..	992	8	..	411	575	14	26	882	92
Christian ..	593	381	26	1,000	..	..	997	3	..	993	7	..	442	544	14	38	852	110
East Coast South																		
All Religions ..	540	418	42	1,000	..	..	997	3	..	991	9	..	373	602	25	21	830	140
Hindu	537	420	43	1,000	..	..	997	3	..	991	9	..	373	601	26	21	828	151
Muslim	576	398	26	1,000	..	..	997	3	..	992	8	..	360	622	18	16	883	101
Christian ..	562	402	36	1,000	..	..	998	2	..	995	5	..	381	601	18	19	840	141
West Coast																		
All Religions ..	582	386	32	1,000	..	..	998	2	..	993	7	..	415	558	27	24	868	108
Hindu	570	394	36	1,000	..	..	998	2	..	993	7	..	406	564	30	24	859	117
Muslim	609	368	23	1,000	..	..	998	2	..	993	7	..	426	551	23	18	900	82
Christian ..	612	360	28	1,000	..	..	1,000	..	..	998	2	..	480	507	13	43	814	113

FEMALES.

Natural division and religion.	All ages U.	All ages M.	All ages W.	0-5. U.	0-5. M.	0-5. W.	5-10. U.	5-10. M.	5-10. W.	10-15. U.	10-15. M.	10-15. W.	15-40. U.	15-40. M.	15-40. W.	40 and over. U.	40 and over. M.	40 and over. W.
1	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
Province																		
All Religions	377	445	178	988	12	..	906	92	2	760	224	7	76	792	132	9	373	618
Hindu	370	448	182	986	14	..	896	101	3	756	237	7	72	793	135	8	369	623
Muslim	426	415	159	999	1	..	970	29	1	845	150	5	94	783	123	9	372	619
Christian ..	450	414	136	998	2	..	981	18	1	903	95	2	145	762	93	24	444	532
Agency																		
All Religions ..	411	469	120	990	10	..	942	56	2	806	188	6	85	828	87	16	475	509
Hindu	404	472	124	989	10	1	934	64	2	789	205	6	79	831	90	15	464	521
Tribal	436	461	103	993	7	..	974	25	1	870	126	4	110	813	77	18	527	455
Christian ..	462	450	88	994	6	..	981	18	1	907	90	3	111	829	60	18	539	443
East Coast North																		
All Religions ..	302	503	195	955	44	1	743	251	6	526	460	14	34	816	150	7	350	643
Hindu	294	507	199	952	47	1	726	268	6	506	480	14	31	816	153	7	345	648
Muslim	397	448	155	994	6	..	934	65	1	746	249	5	56	830	114	9	398	593
Christian ..	397	464	139	993	7	..	950	48	2	785	208	7	77	820	103	14	447	539
Deccan																		
All Religions ..	379	417	204	995	4	1	912	85	3	751	241	8	56	766	178	15	292	693
Hindu	372	416	212	995	4	1	902	94	4	736	255	9	55	758	187	16	282	702
Muslim	421	421	158	998	2	..	962	36	2	816	180	4	54	821	125	8	358	634
Christian ..	435	413	152	999	1	..	973	25	2	874	123	3	80	791	129	20	359	621
East Coast Central																		
All Religions ..	407	431	162	999	1	..	960	39	1	841	156	3	79	803	118	8	396	596
Hindu	403	432	165	999	1	..	959	40	1	839	158	3	77	804	119	7	395	598
Muslim	440	426	134	999	1	..	975	24	1	842	155	3	86	819	95	9	404	587
Christian ..	488	389	123	1,000	..	..	990	9	1	931	67	2	192	723	85	40	442	518
East Coast South																		
All Religions ..	398	423	179	999	1	..	983	16	1	910	88	2	100	780	120	6	389	605
Hindu	394	424	182	999	1	..	982	17	1	909	89	2	97	781	122	5	388	607
Muslim	396	425	179	999	1	..	980	19	1	871	126	3	84	791	125	6	348	646
Christian ..	458	402	140	1,000	..	..	997	3	..	962	37	1	165	746	89	14	450	536
West Coast																		
All Religions ..	426	398	176	999	1	..	973	26	1	866	127	7	133	736	131	16	365	619
Hindu	415	400	185	999	1	..	969	30	1	857	135	8	130	736	134	15	359	626
Muslim	445	395	160	999	1	..	978	21	1	873	120	7	125	743	132	12	369	619
Christian ..	506	368	126	1,000	..	..	999	1	..	960	39	1	233	691	76	56	451	493

U = Unmarried. M = Married. W = Widowed.

iii.—Distribution by age and civil condition of 10,000 of each sex and religion.

Religion and age.	Males.			Females.		
	Unmarried.	Married.	Widowed.	Unmarried.	Married.	Widowed.
1	2	3	4	5	6	7
All Religions	***5,265***	***4,334***	***401***	***3,774***	***4,444***	***1,782***
0–10	9,896	102	2	9,494	493	13
10–15	9,586	407	7	7,690	2,244	66
15–40	3.351	6,402	247	765	7,916	1,319
40 and over	246	8,293	1,461	88	3,730	6,182
Hindu	***5,209***	***4,378***	***413***	***3,699***	***4,479***	***1,822***
0–10	9,885	112	3	9,443	543	14
10–15	9,546	446	8	7,556	2,374	70
15–40	3,298	6,451	251	718	7,934	1.348
40 and over	248	8,259	1,493	82	3,694	6,224
Muslim	***5,831***	***3,889***	***280***	***4,260***	***4,152***	***1,588***
0–10	9,978	21	1	9,853	141	6
10–15	9,895	103	2	8,445	1,504	51
15–40	3,945	5,848	207	941	7,834	1,225
40 and over	213	8,708	1,079	93	3,717	6,190
Christian	***5,562***	***4,084***	***354***	***4,502***	***4,144***	***1,354***
0–10	9,962	37	1	9,899	96	5
10–15	9,878	119	3	9.026	948	26
15–40	3,699	6,104	197	1,451	7,620	929
40 and over	254	8,353	1,393	240	4,441	5,319
Tribal	***5,023***	***4,621***	***356***	***4,311***	***4,631***	***1,058***
0–10	9,885	112	3	9,780	210	10
10–15	9,551	437	12	8,531	1,423	46
15–40	2,419	7,251	330	1,082	8,135	783
40 and over	206	8,595	1,199	174	5.222	4,604
Jain	***5,145***	***4,286***	***569***	***3,193***	***4,430***	***2,377***
0–10	9,951	46	3	9,731	263	6
10–15	9,869	131	..	7,956	2,016	28
15–40	4,450	5,259	291	563	8,008	1,429
40 and over	689	7,511	1,800	53	2,981	6,966

iv.—Sex-ratio by civil condition, age, religion and natural division.

Natural division and religion.	Females per 1,000 males. All ages. U.	M.	W.	0–10. U.	M.	W.	10–15. U.	M.	W.	15–40. U.	M.	W.	40 and over. U.	M.	W.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Province															
All Religions ..	735	1,051	4,563	969	4,874	5,540	764	5,250	8,850	247	1,337	5,782	352	441	4,150
Hindu ..	729	1,049	4,531	967	4,909	5,490	752	5,063	8,568	235	1,327	5,791	324	441	4,111
Muslim ..	750	1,096	5,827	970	6,499	10,222	821	13,994	23,705	266	1,494	6,595	415	408	5,490
Christian ..	826	1,035	3,902	1,002	2,617	4,615	890	7,726	8,688	427	1359	5,142	877	494	3,547
Agency															
All Religions ..	831	1,012	3,331	992	2,630	3,811	794	3,833	3,778	393	1,207	2,749	681	492	3,703
Hindu ..	819	1,012	3,379	986	2,802	3,895	776	3,930	3,884	366	1,201	2,768	669	485	3,771
Tribal ..	881	1,021	3,057	1,017	1,660	3,154	867	3,215	3,143	506	1,240	2,634	720	522	3,326
Christian ..	889	982	3,531	1,012	1,541	3,000	875	3,542	5,000	513	1,179	2,648	976	508	4,107
East Coast North															
All Religions ..	670	1,058	5,322	899	4,281	4,717	572	3,594	7,028	157	1,200	7,336	387	426	4,688
Hindu ..	663	1,062	5,467	892	4,310	4,708	555	3,524	6,943	149	1,195	7,542	375	424	4,815
Muslim ..	708	1,025	4,473	971	4,362	9,200	731	8,453	17,714	160	1,298	6,701	386	420	3,899
Christian ..	769	1,011	3,253	982	2,526	3,842	763	6,724	8,000	280	1,249	4,309	640	462	2,898
Deccan															
All Religions ..	668	1,017	3,272	973	10,959	7,342	706	11,236	10,085	146	1,284	4,817	267	348	2,735
Hindu ..	658	1,020	3,260	969	11,481	7,702	696	10,894	9,826	144	1,280	4,871	265	345	2,701
Muslim ..	708	999	3,414	990	7,082	4,231	750	15,133	13,889	140	1,302	4,387	229	369	3,075
Christian ..	764	1,001	3,251	1,007	5,000	4,750	800	14,867	18,000	239	1,331	4,554	551	357	2,782
East Coast Central															
All Religions ..	740	1,025	4,249	995	10,848	11,452	801	13,319	17,406	224	1,359	5,851	279	432	3,789
Hindu ..	739	1,026	4,215	995	11,190	11,507	798	13,218	16,823	219	1,360	5,836	259	434	3,752
Muslim ..	713	1,002	5,449	978	6,763	7,750	804	18,373	44,500	200	1,370	6,450	287	369	5,103
Christian ..	804	996	4,604	1,001	3,351	..	899	9,899	..	434	1,329	5,968	950	465	4,195
East Coast South															
All Religions ..	787	1,082	4,589	1,009	5,699	8,375	896	10,167	10,591	306	1,481	5,568	286	493	4,286
Hindu ..	778	1,071	4,479	1,009	5,794	7,313	887	9,826	10,582	292	1,464	5,393	256	490	4,194
Muslim ..	833	1,294	8,445	998	6,434	..	951	18,128	13,286	334	1,821	10,229	423	481	7,842
Christian ..	881	1,081	4,273	1,024	2,000	..	983	8,351	7,000	511	1,463	5,893	764	547	3,891
West Coast															
All Religions ..	771	1,086	5,833	964	12,473	13,152	839	18,376	27,434	367	1,512	5,472	702	440	5,974
Hindu ..	771	1,075	5,555	970	13,004	13,000	835	19,267	27,164	365	1,490	5,102	661	447	5,739
Muslim ..	760	1,120	7,186	949	11,733	20,600	830	16,416	33,833	343	1,571	6,640	628	406	7,466
Christian ..	852	1,055	4,708	983	2,750	1,000	951	17,031	5,000	539	1,517	6,715	1,295	525	4,303

U=Unmarried. M=Married. W=Widowed.

Original sorting figures for certain age groups (see paragraph 10 of Chapter VI).

Religion.	Age.	Population. Persons.	Males.	Females.	Unmarried. Persons.	Males.	Females.	Married. Persons.	Males.	Females.	Widowed. Persons.	Males.	Females.
All Religions ..	4–6 ..	**4,042,386**	2,009,907	2,032,479	**3,970,395**	1,997,121	1,973,274	**69,519**	12,327	57,192	**2,472**	459	2,013
	7–13 ..	**8,096,230**	4,111,530	3,984,700	**7,487,036**	4,010,372	3,476,664	**594,448**	99,096	495,352	**14,746**	2,062	12,684
	14–16 ..	**2,852,244**	1,496,890	1,355,354	**1,995,850**	1,365,888	629,962	**831,760**	129,066	702,694	**24,634**	1,936	22,698
	17–23 ..	**5,583,410**	2,559,640	3,023,770	**1,994,738**	1,666,034	328,704	**3,430,390**	874,722	2,555,668	**158,282**	18,884	139,398
Hindu	4–6 ..	**3,539,958**	1,756,953	1,783,005	**3,470,307**	1,745,034	1,725,273	**67,335**	11,493	55,842	**2,316**	426	1,890
	7–13 ..	**7,108,048**	3,606,900	3,501,148	**6,520,372**	3,508,932	3,011,440	**573,676**	95,976	477,700	**14,000**	1,992	12,008
	14–16 ..	**2,491,502**	1,314,090	1,177,412	**1,712,834**	1,188,890	523,944	**756,310**	123,392	632,918	**22,358**	1,808	20,550
	17–23 ..	**4,908,694**	2,255,558	2,653,136	**1,715,996**	1,444,460	271,536	**3,051,156**	794,470	2,256,686	**141,542**	16,628	124,914
Muslim	4–6 ..	**305,058**	154,569	150,489	**304,116**	154,290	149,826	**861**	267	594	**81**	12	**69**
	7–13 ..	**605,440**	309,978	295,462	**591,214**	308,482	282,732	**13,762**	1,466	12,296	**464**	30	**434**
	14–16 ..	**224,912**	113,246	111,666	**171,350**	110,278	61,072	**51,852**	2,910	48,942	**1,710**	58	**1,652**
	17–23 ..	**410,730**	184,578	226,152	**164,600**	137,740	26,860	**234,054**	45,418	188,636	**12,076**	1,420	**10,656**
Christian	4–6 ..	**157,587**	78,882	78,705	**156,672**	78,492	78,180	**876**	381	495	**39**	9	**30**
	7–13 ..	**320,658**	161,732	158,926	**315,664**	160,706	154,958	**4,788**	1,002	3,786	**206**	24	**182**
	14–16 ..	**113,386**	58,166	55,220	**94,828**	56,500	38,328	**18,144**	1,626	16,518	**414**	40	**374**
	17–23 ..	**220,860**	100,606	120,254	**99,636**	73,194	26,442	**117,594**	26,864	90,730	**3,630**	548	**3,082**

v.—Distribution by civil condition of 1,000 of each

Distribution of 1,000 males of each age by civil condition.

	Community.	All ages.			0–6			7–13			14–16			17–22			24–43			44 and over.		
		U.	M.	W.	U	M.	W.	U.	M.	W.	U.	M.	W.	U.	M.	W.	U.	M.	W.	U·	M.	W·
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	Adi-Andhra.	492	470	38	992	8	..	948	51	1	815	181	4	417	572	11	55	903	42	18	824	158
2	Adi-Dravida.	557	415	28	1,000	..	..	996	4	..	969	31	..	680	315	5	83	890	27	15	853	132
3	Anglo-Indian.	639	328	33	1,000	..	..	992	8	..	973	26	1	867	129	4	291	680	29	91	773	136
4	Arya Vaisya (Komati).	451	488	61	993	7	..	949	49	2	743	246	11	428	548	24	107	836	57	43	743	214
5	Bant ..	582	388	30	998	2	..	991	9	..	962	37	1	798	198	4	202	772	26	15	856	129
6	Bavuri ..	511	472	17	996	4	..	965	34	1	878	120	2	376	616	8	20	967	13	6	911	83
7	Boya ..	544	398	58	999	1	..	988	12	..	914	82	4	609	374	17	128	805	67	39	717	244
8	Brahman, Kanarese.	501	444	55	997	3	..	995	5	..	947	53	..	623	370	7	101	861	38	41	744	215
9	Brahman Malayalam.	491	473	36	1,000	..	..	992	8	..	982	18	..	727	266	7	178	793	29	43	839	118
10	Brahman, Oriya.	458	509	33	993	7	..	965	34	1	774	224	2	302	691	7	36	940	24	16	830	154
11	Brahman, Tamil	473	484	43	1,000	..	..	991	9	..	918	82	..	582	414	4	69	908	23	23	802	175
12	Brahman, Telugu.	428	514	58	996	4	..	947	52	1	715	280	5	368	619	13	87	868	45	57	734	209
13	Chakkiliyan.	561	412	27	1,000	..	..	996	4	..	960	40	..	600	392	8	69	901	30	13	862	125
14	Chenchu ..	514	445	41	997	3	..	970	30	..	786	211	3	460	503	37	88	853	59	35	831	134
15	Cheruman.	547	423	30	1,000	..	..	999	1	..	971	27	2	645	332	23	72	890	38	19	866	115
16	Dandasi .	516	464	20	995	5	..	939	59	2	829	170	1	469	522	9	32	946	22	11	906	83
17	Golla ..	484	457	59	975	24	1	908	89	3	727	255	18	495	472	33	125	813	62	40	751	209
18	Holeya ..	590	373	37	998	2	..	996	4	..	990	10	..	770	223	7	104	850	46	15	831	154
19	Kallan .	419	530	51	1,000	.	..	941	59	..	900	100	..	261	739	..	143	780	77	34	828	138
20	Kalinga ..	295	653	52	826	167	7	472	514	14	299	665	36	144	817	39	37	912	51	49	796	155
21	Kalinji ..	392	573	35	958	41	1	765	234	1	427	562	11	169	807	24	22	930	48	27	862	111
22	Kallan	549	408	43	999	1	..	997	3	..	981	19	..	762	228	10	131	821	48	15	816	169
23	Karnam (Ganjam and Vizagapatam)	407	530	63	921	76	3	765	223	12	459	512	29	237	708	55	75	838	87	50	772	178
24	Kond	459	495	46	976	23	1	937	59	4	710	264	26	439	518	43	77	871	52	31	816	153
25	Labbai .	583	392	25	999	1	..	996	4	..	966	30	4	733	258	9	105	866	29	16	878	106
26	Madiga	533	419	48	997	3	..	974	25	1	887	108	5	573	414	13	107	840	53	28	767	205
27	Mala .	503	453	44	994	6	..	958	41	1	854	139	7	528	461	11	90	865	45	24	800	176
28	Maravan	546	413	41	999	1		997	3	.	982	17	1	757	234	9	124	835	41	21	821	158
29	Nayar .	605	350	45	1,000	..	..	999	1	..	991	8	1	896	93	11	256	687	57	36	812	152
30	Pallan .	529	427	44	1,000	..	..	997	3	..	966	33	1	672	318	10	74	880	46	11	810	179
31	Panchama	486	472	42	989	10	1	931	68	1	734	256	10	394	587	19	71	881	48	22	820	158
32	Paraiyan .	549	417	34	1,000	..	.	997	3	..	972	28	..	682	312	6	81	885	34	14	836	150
33	Razu	495	461	44	997	3	..	969	30	1	746	250	4	518	467	15	126	835	39	29	792	179
34	Saora ..	484	470	46	976	24	..	923	75	2	675	305	20	413	543	44	95	846	59	42	808	150
35	Sengunthar	536	420	44	1,000	..	..	995	5	..	933	63	4	671	321	8	109	849	42	34	791	175
36	Telaga .	485	467	48	988	12	..	937	58	5	760	224	16	464	514	22	76	872	52	33	786	181
37	Toda .	398	535	67	1,000	.	..	846	154	.	696	261	43	622	311	67	175	701	124	26	816	158
38	Valluvan .	551	411	38	1,000	..	.	996	4	.	965	34	1	727	268	5	111	852	37	20	820	160
39	Vanniyan .	546	418	36	1,000	..	..	995	5	.	949	50	1	706	285	9	111	855	34	21	828	151
40	Visvabrahman, Tamil.	543	412	45	1,000	..	..	994	5	1	957	38	5	756	234	10	142	813	45	28	800	172
41	Visvabrahman Telugu.	461	479	60	973	26	1	916	78	6	672	307	21	414	560	26	98	837	65	49	742	209
42	Yadava .	530	422	48	999	1	..	989	11	.	951	48	1	716	274	10	141	816	43	25	790	185

U = Unmarried.

sex by age for selected communities.

Distribution of 1,000 females of each age by civil condition.

All ages.			0–6			7–13			14–16			17–23			24–43			44 and over.			
U.	M.	W.	U.	M.	W.	U.	M.	W.	U.	M.	W.	U.	M.	W.	U.	M.	W.	U.	M.	W.	
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	
343	494	163	969	31	..	743	252	5	185	791	24	40	904	56	14	785	201	9	331	660	1
428	429	143	999	1	..	945	54	1	517	475	8	114	859	27	23	802	175	7	346	647	2
580	326	94	1,000	..	..	995	4	1	934	60	6	681	308	11	201	707	92	121	487	392	3
282	494	224	991	8	1	609	383	8	203	749	48	38	845	117	23	699	278	50	335	615	4
382	426	192	993	7	..	900	98	2	574	417	9	137	833	30	16	799	185	6	272	722	5
388	469	143	986	13	1	905	93	2	511	477	12	95	875	30	20	804	176	7	378	615	6
416	417	167	997	3	..	898	98	4	437	529	34	89	859	52	29	740	231	19	312	669	7
313	455	232	996	4	..	835	163	2	99	877	24	21	905	74	8	721	271	3	284	713	8
396	413	191	1,000	..	..	873	121	6	494	456	50	247	682	71	82	735	183	53	332	615	9
253	503	244	984	15	1	469	520	11	61	895	44	17	881	102	11	689	300	5	258	737	10
309	472	219	998	2	..	841	157	2	131	853	16	26	919	55	6	775	219	4	304	692	11
244	486	270	979	20	1	527	465	8	57	896	47	16	867	117	6	686	308	5	244	751	12
469	430	101	991	1	..	974	26	..	639	355	6	128	849	23	16	863	121	6	464	530	13
442	466	92	994	5	1	883	115	2	439	531	30	206	769	25	67	813	120	66	452	482	14
423	412	165	999	1	..	966	33	1	606	371	23	158	784	58	36	784	180	12	302	686	15
367	470	163	970	29	1	857	139	4	494	491	15	144	821	35	26	774	200	9	346	645	16
328	471	201	942	57	1	726	264	10	300	655	45	68	849	83	21	716	263	16	325	659	17
398	394	208	999	1	..	964	34	2	594	393	13	111	844	45	19	765	216	7	240	753	18
417	464	119	1,000	..	..	946	54	..	615	385	..	250	729	21	94	824	82	27	297	676	19
171	666	163	639	353	8	257	721	22	157	797	46	47	902	51	12	805	183	6	453	541	20
303	563	134	924	74	2	509	488	3	270	709	21	95	856	49	25	813	162	26	489	485	21
403	416	181	999	1	..	986	14	..	784	212	4	192	776	32	15	785	200	5	328	667	22
325	525	150	856	142	2	587	394	19	332	618	50	139	778	83	48	738	214	67	478	455	23
387	502	111	943	46	11	854	129	17	501	451	48	162	776	62	37	832	131	41	530	429	24
411	421	168	999	1	..	971	28	1	556	437	7	105	864	31	15	789	196	6	297	697	25
391	449	160	987	13	..	800	184	16	285	688	27	72	872	56	41	743	216	24	317	659	26
338	482	180	973	26	1	780	213	7	255	718	27	47	897	56	14	766	220	12	315	673	27
423	434	143	999	1	..	989	11	..	786	210	4	170	808	22	15	845	140	7	408	585	28
407	358	235	1,000	..	..	984	15	1	686	284	30	253	664	83	54	677	269	15	283	702	29
414	436	150	999	1	..	985	15	..	729	266	5	144	830	26	15	827	158	4	381	615	30
332	503	165	955	44	1	690	303	7	241	732	27	65	860	75	20	763	217	16	366	618	31
416	437	147	999	1	..	967	32	1	599	395	6	123	850	27	17	812	171	6	361	633	32
343	460	197	989	11	..	872	124	4	313	650	37	64	865	71	23	720	257	7	335	658	33
426	467	107	964	35	1	873	120	7	487	481	32	192	749	59	48	811	141	35	530	435	34
405	441	154	999	1	..	948	51	1	534	449	17	113	853	34	22	802	176	12	391	597	35
325	476	199	961	37	2	755	235	10	242	716	42	57	848	95	20	720	260	18	352	630	36
233	646	121	804	152	44	637	333	30	100	900	..	..	966	34	10	897	93	..	571	429	37
417	429	154	999	1	..	967	31	2	623	368	9	179	793	28	15	810	175	8	356	636	38
416	430	154	999	1	..	951	48	1	508	483	9	109	859	32	19	791	190	10	360	630	39
394	423	183	999	1	..	966	33	1	601	385	14	117	835	48	15	764	221	6	331	663	40
304	487	209	943	55	2	638	349	13	262	685	53	77	818	105	21	705	274	21	[illegible]	64	41
373	429	198	996	4	..	925	73	2	537	441	22	108	841	51	14	754	232	7	316	677	42

M = Married. W = Widowed.

CHAPTER VII.

INFIRMITIES.

THE infirmities recorded at this census were the same as in 1921, viz., insanity, deafmutism, blindness, and leprosy. I tried to use the census enumeration for a supplemental enquiry into the prevalence of elephantiasis in certain notoriously filarial districts. The results however were not encouraging and quite clearly did not represent the real facts. The popular name 'Cochin leg' by which this disease is known is in itself an indication of its considerable prevalence at least on the West Coast. Travancore State included elephantiasis among the infirmities recorded at this census and the total sufferers outnumbered those under the other four infirmities put together and represented an affection rate of 289 per 100,000. In other words, more than 1 in 40 of the population suffers from it. A comparable rate ought to prevail at least in the southern parts of Malabar district. If the enquiry into infirmities is continued at the next census I would suggest the formal inclusion of elephantiasis. Tanjore and Malabar returned 1,380 and 909 persons respectively as suffering from this disease.

2. Only the main table will be found this year. The additional table showing infirmities by selected castes was at my suggestion dispensed with by the Madras Government. Grave qualifications must attach to even the bare record of infirmity secured through a census enumeration and an allocation of infirmities by community based on such an original enquiry can hardly be of any real value and might be misleading.

Value of the results.

3. The above remarks indicate that census figures of infirmity can be taken only as approximations. The determination of an infirmity implies a definition and in the apprehension and application of definitions by a multitude of observers error always enters. The ordinary man can count individuals as he can cattle ; he is set a very different task when he is asked to distinguish men as say insane. To apply a definition of insanity strictly would require considerable professional knowledge, experience and observation, none of which exist in or could be expected from the ordinary census officer. In most cases the head of a family gives to the enumerator the answers to the census questions regarding all members of the family ; consequently the enumerator's record is in many cases not that of direct observation. But accurately to determine the existence of an infirmity, observation is essential. The above facts touching the nature of the enumerator's enquiry point to another source of possible error, viz., intentional concealment of an infirmity by the person giving the answer. It was suggested in 1921 that the enumerator might use the infirmities column as a means of intimidation : this I think is unlikely. On the other hand, the possibility of him being misled by a parent's unwillingness to declare, e.g., a daughter of marriageable age as leprous or insane, undoubtedly exists.

4. The order of accuracy for the four infirmity returns dealt with here is probably blindness, deafmutism, leprosy and insanity. Blindness is easy to recognize and there exists no hesitation or shame in declaring it. The instructions given were to enter as blind only those totally blind of both eyes

and particular injunction was given against including the one-eyed. No attempt was made to set out a test which enumerators should apply in doubtful cases. The institution of tests to be applied by an inexpert and varying agency is a measure of very doubtful value and may well introduce instead of prevent error. The better way is to confine the instructions to matter of fact language and to rely upon the commonsense of the enumerator. The ordinary man will read but one meaning into the phrase 'totally blind of both eyes' and it is best to leave him to that. The determination of deafmutism also is in most cases within the compass of the ordinary man, for the facts involved are few and precise. There is rather more hesitation in declaring this infirmity than blindness but on the other hand it is if anything more difficult to conceal; in every country the dumb person is well known in his village and is practically a village character and well known and recognized as such. The hand of God is felt to be upon him and many a child's first apprehension of 'lacrimæ rerum' is when he sees a deafmute for the first time. When we deal with leprosy we enter a much more troubled region. Here questions of shame, apprehension and possible confusion appear. The tendency is still to conceal if possible this disease, and the fear that knowledge of its existence will involve forcible transfer to confinement probably still persists. It is on occasion also confused by the ignorant with totally different and less malignant skin affections and in its earlier stages cannot be detected at all by the layman. As for insanity it is very doubtful whether the figures collected at the census are of any value at all as an absolute record. Experts differ on most things but on few have they differed more often or more obstinately than on insanity in itself or in its particular manifestations. To expect therefore that a census enumerator's idea of insanity is of any precise value is to cherish an illusion.

5. The census determinations have however so far been the only ones attempting to cover the whole country and even approximations are better than no figures at all. Moreover, although infirmity figures as an isolated group may be of no final value from defects or dubiety in their collection, a periodical series collected by the same agency under the same conditions may yield matter of value in its ratios. It is only in some such way that use can really be made of census infirmity figures. To say that so many persons in such a district are suffering from such an infirmity may be an approximation of no great value as proving the actual numbers at that time so affected. If, however, the ratio which this number bears to similar determinations for other areas or for the same region at other times remains constant or changes in some recognizable manner it may be possible to make from observations of such ratios or their changes deductions not without interest or value.

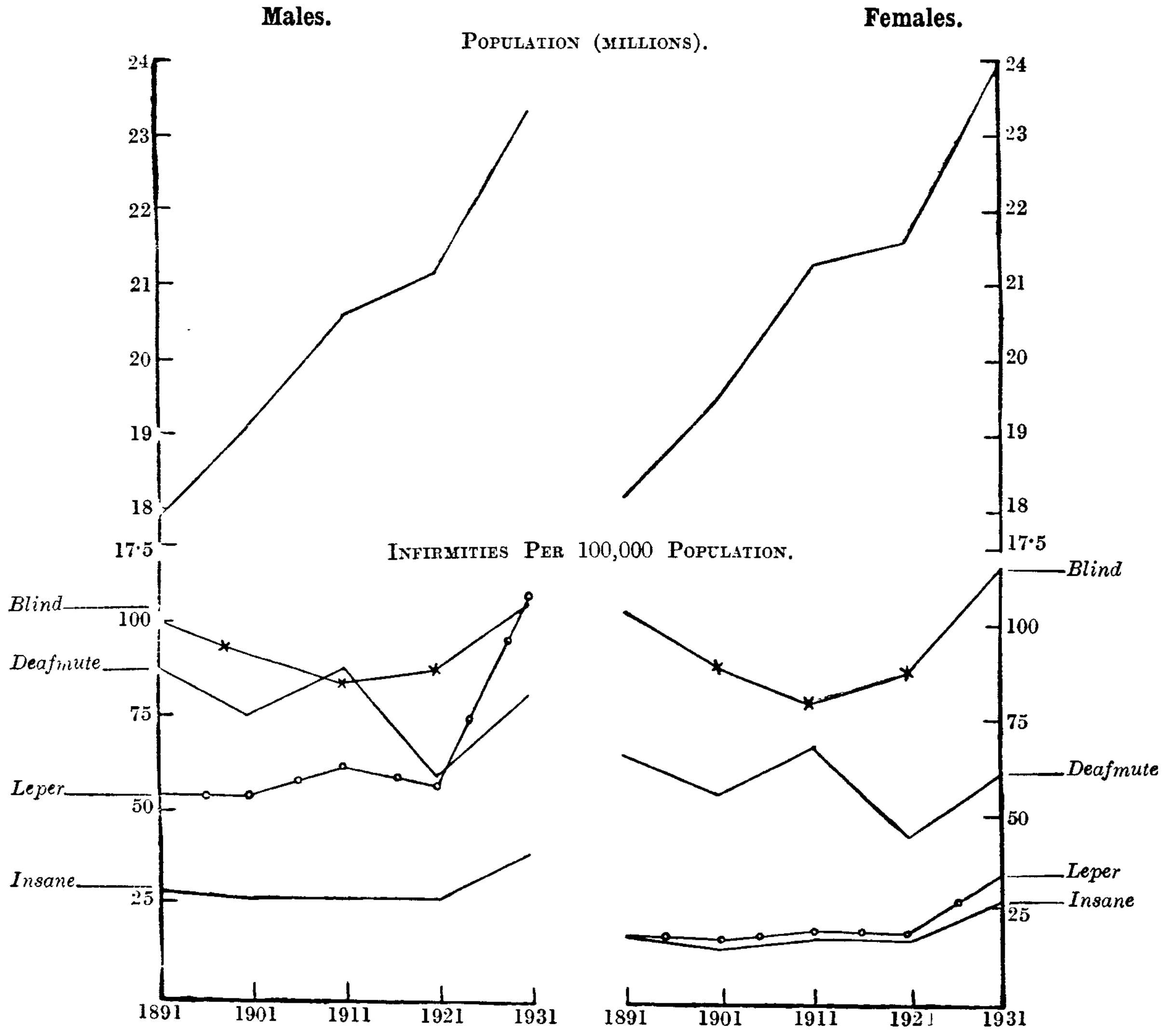
Comparison with previous censuses.

6. The first point of interest is the large increase over 1921 observable in the case of all four infirmities. While the total population increased by 10 per cent, the insane increased by 79 per cent, the deafmutes by 56, the blind by 46 and the lepers by no less than 112. These increases sound impressive but one must bear in mind that they relate to quantities in themselves generally less than 1 in 1,000 of the total population. So far as the insane are concerned, the total number in 1921 was only 1 in 5,000. It is better therefore to confine ourselves as far as possible to the ratio which the infirmity bears to the total population. This is expressed generally per 100,000 of the latter and it is on that basis that most of the subsidiary tables are constructed.

Even this ratio is subject to qualification, the degree varying with the infirmity. Afflicted persons do not ordinarily show the same range of movement as their sounder brethren. A blind man however intelligent has everything against him when he travels. The same but to a less extent applies to the insane and deafmutes. So far as lepers are concerned, the effect is probably

small. These considerations apply with force to the figures for districts from which emigration is pronounced. Where, as from Ganjam-Vizagapatam, emigrants are nearly all labourers, the proportion of infirm among them could reasonably be put as much smaller than that among the population left behind ; the discrepancy would be widest in the case of the blind and least for the lepers. It would follow from this that where emigration is a pronounced feature in a district's life, the infirmity ratio ought to be taken on the natural population if possible. This has been examined for some districts under the respective infirmities.

Population and Infirmities, 1891–1931.



7. The diagram illustrates the infirmity returns by sex along with the growth in population. The population curve is plotted in millions and the infirmities are plotted by their representation in each 100,000 at the various censuses. If any infirmity were a constant feature one would expect its representation in the diagram to be more or less a straight line. A rise in the curve indicates that a larger, a drop that a smaller, proportion of the population has become afflicted. The end of the blindness curve is very little above its beginning but the intervening passage indicates considerable variation in the census returns. The insanity curve is much the flattest, indicating a much more constant ratio. The leper curve oscillates more between 1891 and 1921 and has taken a violent rise during the last decade with the result that now leprosy claims more male victims than does any of the other infirmities, a marked change from conditions at previous censuses. The chief features in

the deafmute curve are its pronounced oscillations. The figures for 1891, 1911 and 1931 are peaks, those for 1901 and 1921 troughs. Whether any true periodicity exists is another matter and much more accurate original data would be required for research. Before the particular infirmities are discussed separately some comment is required on the pronounced rise in the infection rate for all. Something may be attributed to a closer enumeration control, particularly in Ganjam, where a special officer was at work. With advancing knowledge and a weakening of ignorant apprehensions or motives for concealment it is to be expected that reluctance to admit the presence of infirmities will lessen, i.e., the apparent incidence will rise. The past decade has seen much work done in the presidency in public health and on the medical side generally. The number of special institutions has increased ; the small table in the margin will indicate to what extent. In the case of leprosy in particular, much propaganda has been done to induce an early declaration of the disease and the spreading of the good news that successful treatment is possible given early detection may have induced many to come forward who otherwise would have kept their infirmity to themselves. The weakening of the joint family system must tend to throw more of the infirm on to the world and bring their infirmities into recognition. Instead of some leper or lunatic or deafmute being supported more or less willingly by the family as one of the burdens which God has seen fit to place upon it the tendency is growing for the burden to be transferred to the shoulders of a Government or local authority through the intermediary of a leper or lunatic asylum, a deaf and dumb institution or a home for the blind. One may say that other things being equal the revealed incidence for these infirmities should tend slightly to rise with each census. The rate of increase is least in the case of the blind. If, as I said earlier, the blind return may be taken as the most reliable the rate of change in it should normally be less.

	1921.	1931.
Leper asylums ..	8	11
Mental hospitals.	3	3
Blind schools ..	2	3

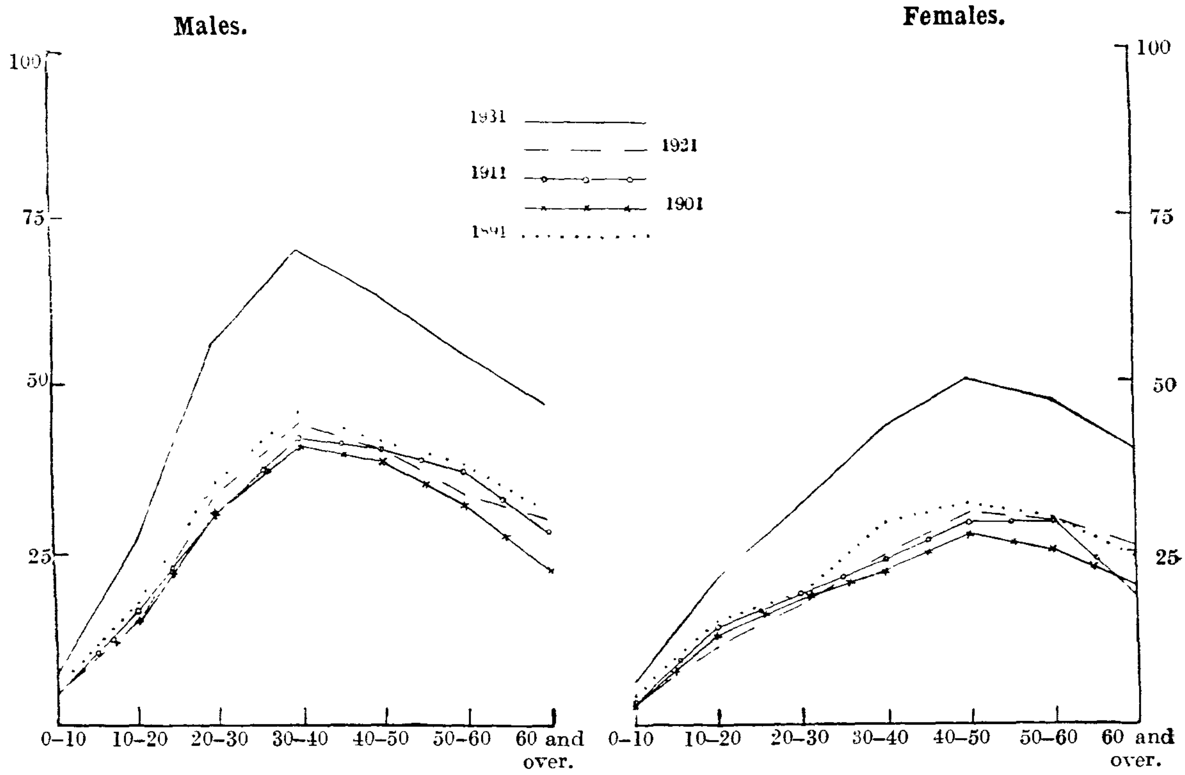
Diagram illustration.

8. Diagrams have been drawn illustrating for each sex and infirmity the incidence by age-period for the last five censuses. In Chapter IV diagrams will be found showing the distribution of the sexes by age-periods for the total population. A comparison of these last with the various infirmity curves is instructive. Without embarking on detailed deductions, we may note in passing that the frequency of blindness grows with age and might in fact almost be expressed as a function of it. In all cases the general shape of the curves is alike. The blindness curves however lie more closely and uniformly together than those for the other three infirmities. This may be taken to indicate again the more reliable determination of blindness, while the general shape with a steep rise at the later years shows the cumulative aspect of this infirmity, its clear connection with age and ordinary life and in fact its much less pronounced organic relationship to or effects on the human body. Only for blindness does the incidence advance steadily with the age-period. In all the others after a peak at some intermediate period the infirmity curve falls, indicating that after a certain age the infirm die off more quickly than the ordinary population. This is what might be expected and is most marked in the case of the deafmutes ; the fall of the curve after an early peak illustrates that sufferers from this infirmity are in general shortlived and that advancing age has no causal connection with it.

9. Important points in these curves are changes in slope and stages at which these occur, different degrees of change between the sexes, and the periods corresponding to the peaks. An increased upward tendency indicates a greater degree of onset while the steepness of fall after a peak indicates the comparative rate at which the infirm die off as compared with the ordinary population. Where such a feature of a curve is repeated census after census it may be taken as indicating a continuing tendency. In these curves the vertical readings are of little importance ; what is of value are recurrences of detail or type at the same period. These considerations should be applied in the examination of each curve.

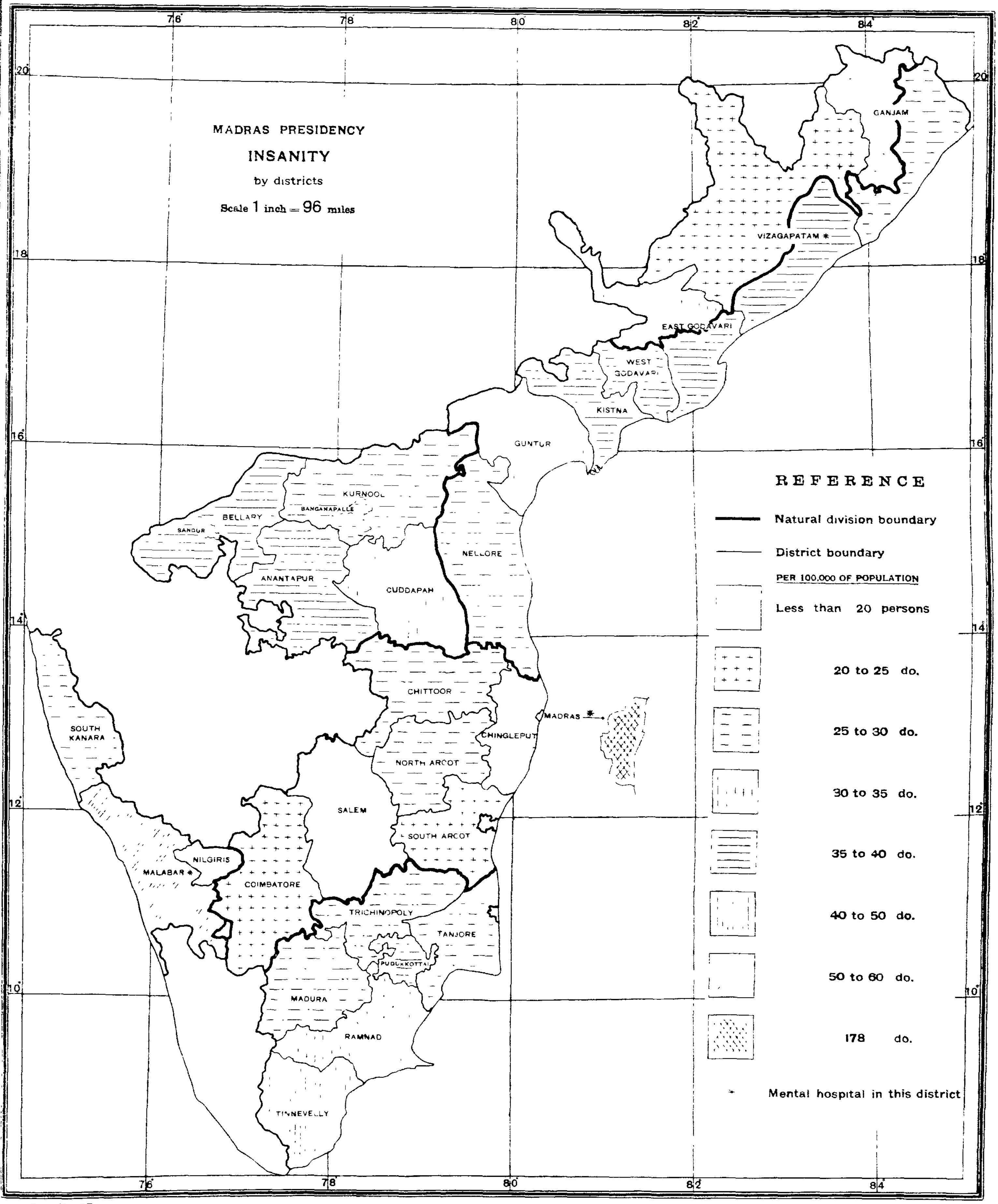
Insane per 100,000 *of population by ten-year periods.*

Insanity.



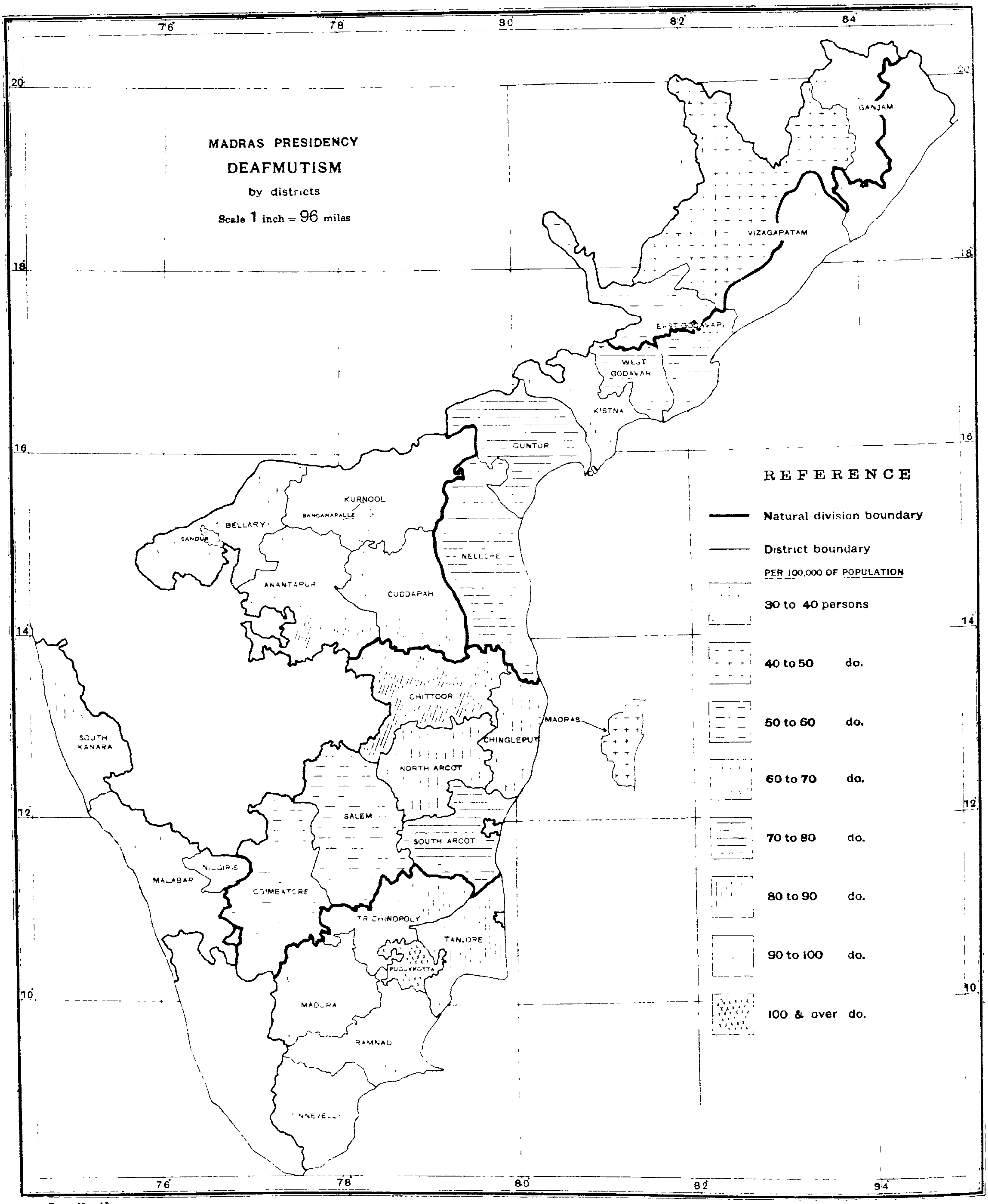
10. The map shows the distribution by districts of insanity per 100,000 of the population. In this as in all the other hatched maps closeness of pattern increases with the dimensions to be represented. Thus a glance shows without looking at the legend that the darkest and therefore most infected areas are Madras City, Malabar, the Telugu river deltas with the adjoining Vizagapatam, Bellary, Anantapur and Tinnevelly. Chingleput and the Nilgiris show practically no change from 1921 and Salem's increase is very small. In all the others the increase is pronounced. It is difficult to understand at first sight why the Godavari-Kistna delta region should be notably more affected than its neighbours, or why Bellary should suffer so much more than Kurnool or Anantapur. It can hardly be said that the circumstances of the decade were such as to encourage the spread of insanity ; on the whole conditions were good. Political disturbances were strong at the beginning but greatly diminished thereafter. Prices were reasonable and in general the stress of life could reasonably be said to be less than in the foregoing ten years.

The diagram above shows that increase as distributed over all the age-periods, the 1931 curve following closely the pattern of its predecessors. The peaks are at the same places, 30–40 for males and 40–50 for females, the former being more pronounced. An increase in gradient is noticeable in the male curve after the 10–20 group. This illustrates that insanity is not a disease which precipitates itself in the earlier years ; rather it awaits the arrival of turning points in life to declare itself such as puberty, the passing of childhood and the entry upon family or working cares. The marked increase in steepness after 10–20 in the male curve illustrates this admirably and is in keeping with the ordinary facts of life. The female curve shows a much less marked change in slope. Though the physical change of puberty takes a pronounced form among women, they are less exposed to the anxieties and stress of working or business life and their life is in some ways much more natural. They are more secluded from the outside world and there is less chance of insanity being precipitated by external influences ; rather it declares itself gradually with increasing years. The peak in the male curve is at 30–40 and is marked at every census. Clearly it is at the turning point of maturity in India that labour and mental strain, physical abuse and possibly harsh treatment begin to take their effect on male lunatics and the downward slope after 40 years shows that they die off much



Reg No 57
Copies 1150

Helio-zinco., Survey Office, Madras
1932.



Reg No 45
Copies 1150

Helio-zinco, Survey Office, Madras.
1932.

more quickly than the unaffected. For women the peak is 10 years later and the downward slope after it is more gradual. This shows that the climacteric among women begins the accelerated departure of the insane, not a surprising association. The gentler down slope after the peak shows that the female insane do not die off so rapidly as the male and in general these curves show that insanity makes on the whole a milder appearance among women than among men. The presence of a mental asylum obviously tends to swell the lunatic proportion in a district and the Madras figure of 178 per 100,000 is a notable illustration. All insane convicts in the presidency for example are sent to Madras and so swell its total of mentally afflicted. Asylums exist in Calicut and at Waltair but the great majority of the inmates come from the district housing the asylum, and any artificial effect of its presence is but slight. The table in the margin gives the number of insane in asylums at the beginning and end of the decade. The birthplace of these inmates has been allowed for and the effect indicated in Subsidiary Table *i*. The Madras figure for male insane from 251 becomes 194 per 100,000 while the female goes from 96 to 83. Nowhere else did the rates suffer much change by this adjustment of birthplace. Malabar's rate increased, showing that there are more Malabaris mad elsewhere than there are mad strangers in Malabar.

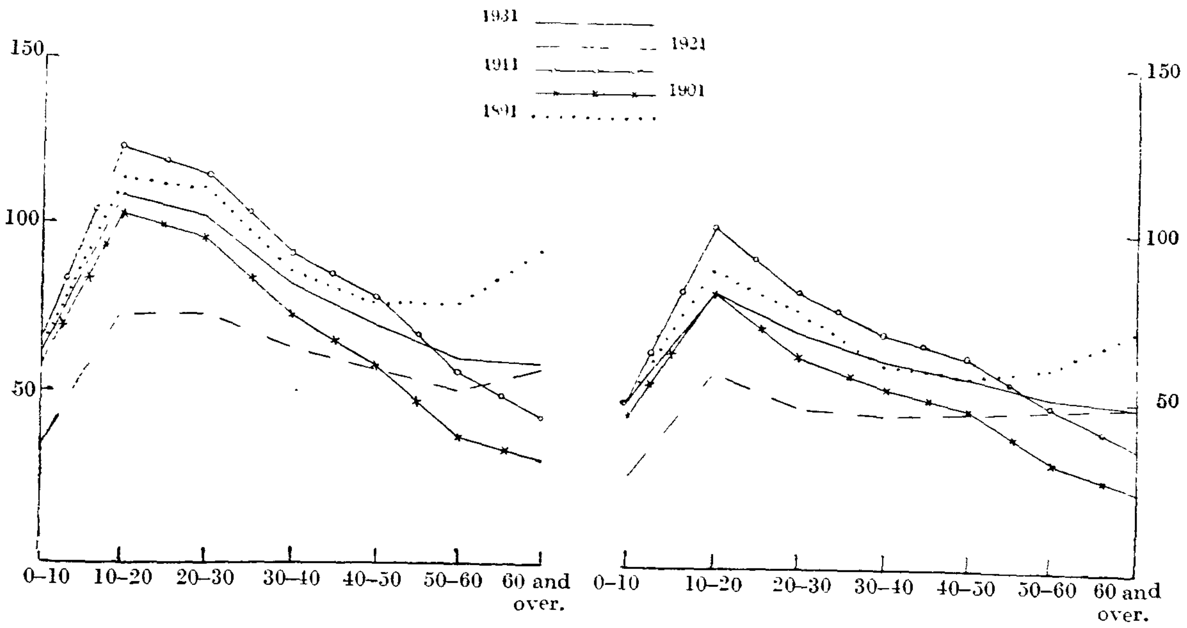
Number of insane in asylums.

	1921.	1931.
Madras ..	643	1,041
Waltair ..	93	114
Calicut ..	206	278

Deafmutism.

Deafmutes per 100,000 *of population by ten-year periods.*

Males. **Females.**



11. The map shows the darkest area to be Pudukkottai State with over one in a thousand of its population deafmutes. The districts adjoining this are all in the more affected class while Anantapur, Cuddapah and Chittoor form another group of comparatively greater incidence. Between these two belts lies a band of lighter incidence which runs across the province from Chingleput to Malabar. The Agencies and Nilgiris return the lowest figures. 1921 showed North Arcot as the most affected district with a dark band adjoining it. 1931 shows this position as practically reversed, for North Arcot and its neighbours now form a region of light incidence surrounded by darker areas.

The violent oscillation referred to in 1921 in the statistics of deafmutes has repeated itself for 1931. The curves in the diagram illustrate these variations. The 1931 curves remain almost uniformly above all the others except for deafmutism. For this 1931 occupies a central position, 1891 and 1911 being steadily above, 1901 and 1921 below. The apparent twenty-year periodicity already referred to is illustrated here.

Apparent 20-year fluctuation.

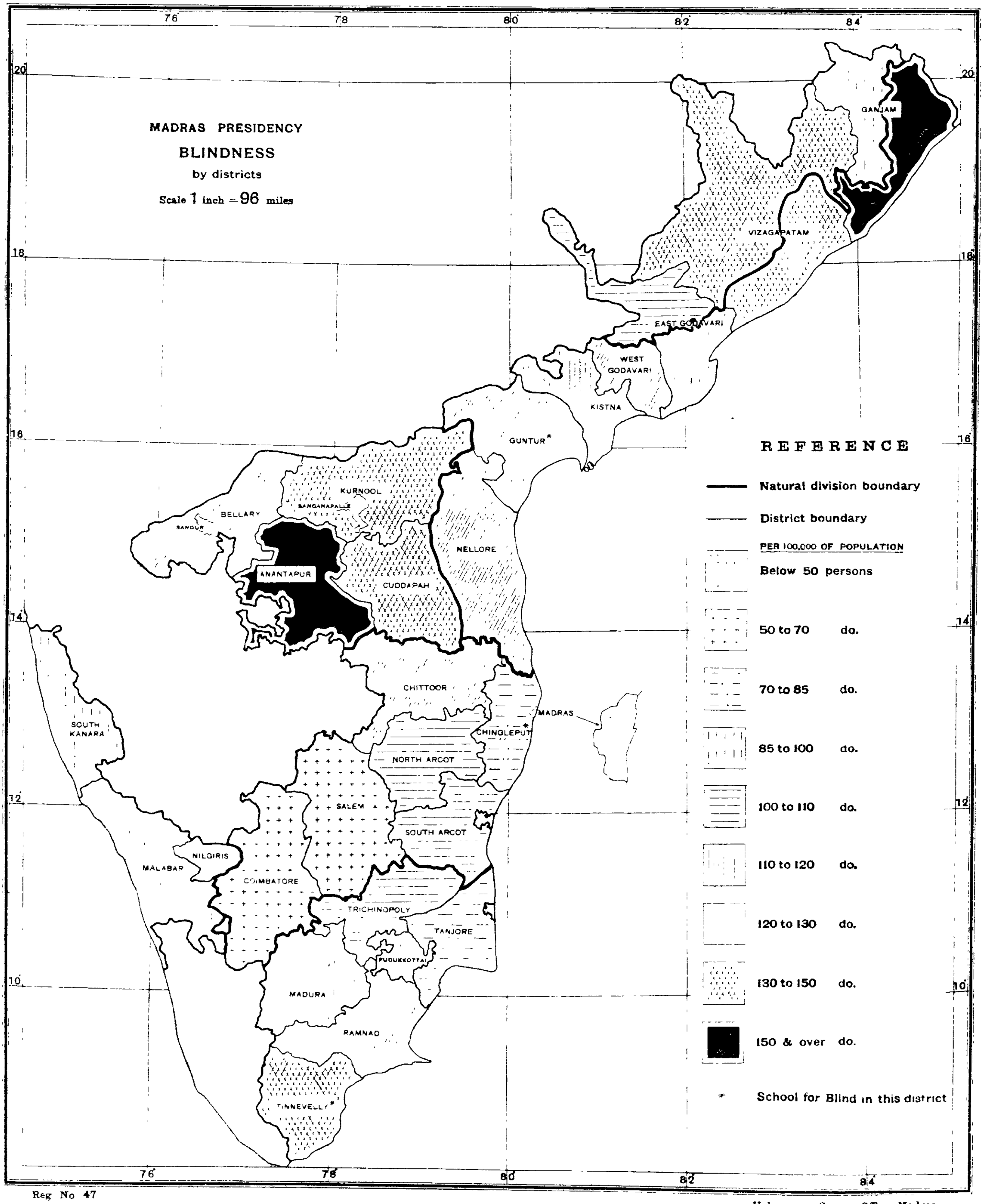
12. The 1921 curves differ considerably from all the others. There is the same steep rise to an early peak at age 10–20 but that peak is lower and the curve in general continues lower than all the others. Mr. Boag suggested in 1921 that influenza had proved particularly lethal to deafmutes. The difference in height is most marked at age-period 10–20 and thereafter the curves tend to approximate. The approximation in later age-groups shows that this selection could not have been so violent in later years, which might be taken to illustrate the generally accepted view that influenza took its chief toll among those in the prime of life. Between 10–20 and 20–30 for males the 1921 curve is almost horizontal whereas all the other curves show a downward slope at this stage. This rather tells against the theory of selective lethal influence of influenza on deafmutes for it indicates that their comparative survival rate at that period was greater in 1921 than usual. Possibly influenza mortality among deafmutes was more marked in the earliest years of life, i.e., children and youths suffered most. It is difficult to see why influenza should show so marked a lethal partiality for deafmutes and the 1921 record does not as I have indicated, support the theory throughout. The twenty-year apparent periodicity is more intriguing. A peculiar local feature that emerges is the difference in behaviour between the districts of Chingleput, North Arcot, Salem and Coimbatore and the rest of the presidency. In 1911 when a heavy fall in the numbers of deafmutes was returned from all parts of the presidency these four districts formed an exception ; in two the fall was very slight while in the others an actual increase was recorded. At the 1931 census, when heavy increases are returned all over, these districts elect to show a decrease, which attains over 20 per cent in the case of Coimbatore and North Arcot. There is no reason to suppose enumeration eccentric in these districts : so far as my 1931 experience goes I should be inclined to rate two at least as above the average in the quality of general census work. It may be that the same period is at work in these areas but has its peaks at different points.

For both sexes in this infirmity the peak is at the same point throughout the series and the steep slope is in the very first stage of the curve. This shows in a marked way the congenital nature of deafmutism. Were the enquiry conducted strictly by medical men the return at ages 0–10 would be very much higher than it is and probably the whole record would be a fall from an initial peak.

The 1921 curve shows a rise after age 50–60. This seems hardly a likely record. For older people senile deafness was probably recorded where true deafmutism did not exist and until a better recording agency is at work it is doubtful if any attention should be paid to deafmutism above the age of 50.

13. Deafmutes are frequently otherwise afflicted. The small table on the flyleaf will illustrate this. Two-thirds of the cases of multiple infirmity show deafmutism as a component and of the actual combinations insanity plus deafmutism is much the most common. Here again, the figures reflect common observation. Deafmutes are often feebleminded if not actually insane and the fact that no more cases of the combination of deafmutism and insanity have been returned may be taken as indicating that on the whole enumerators did not include the merely half-witted among the insane.

14. The association of deafmutism with insanity indicated above has a further illustration in the unusual figures for Chingleput, Salem, Coimbatore and North Arcot already referred to. In the first three of these districts, the insanity affection is markedly low while in the fourth, the rate if not among the least in the presidency, is among the less. Thus a low insanity affection accompanies a low deafmutism rate. It has been found of recent years that thyroid deficiency is one likely cause of deafmutism ; if so, the relation of this infirmity to cretinism and idiocy becomes clear and one might expect deafmute and insanity incidence often to be higher or lower in company. No such definite conclusion could be reached from Madras district figures but it is noteworthy that at one extreme the relation holds.



Reg No 47
Copies 1150

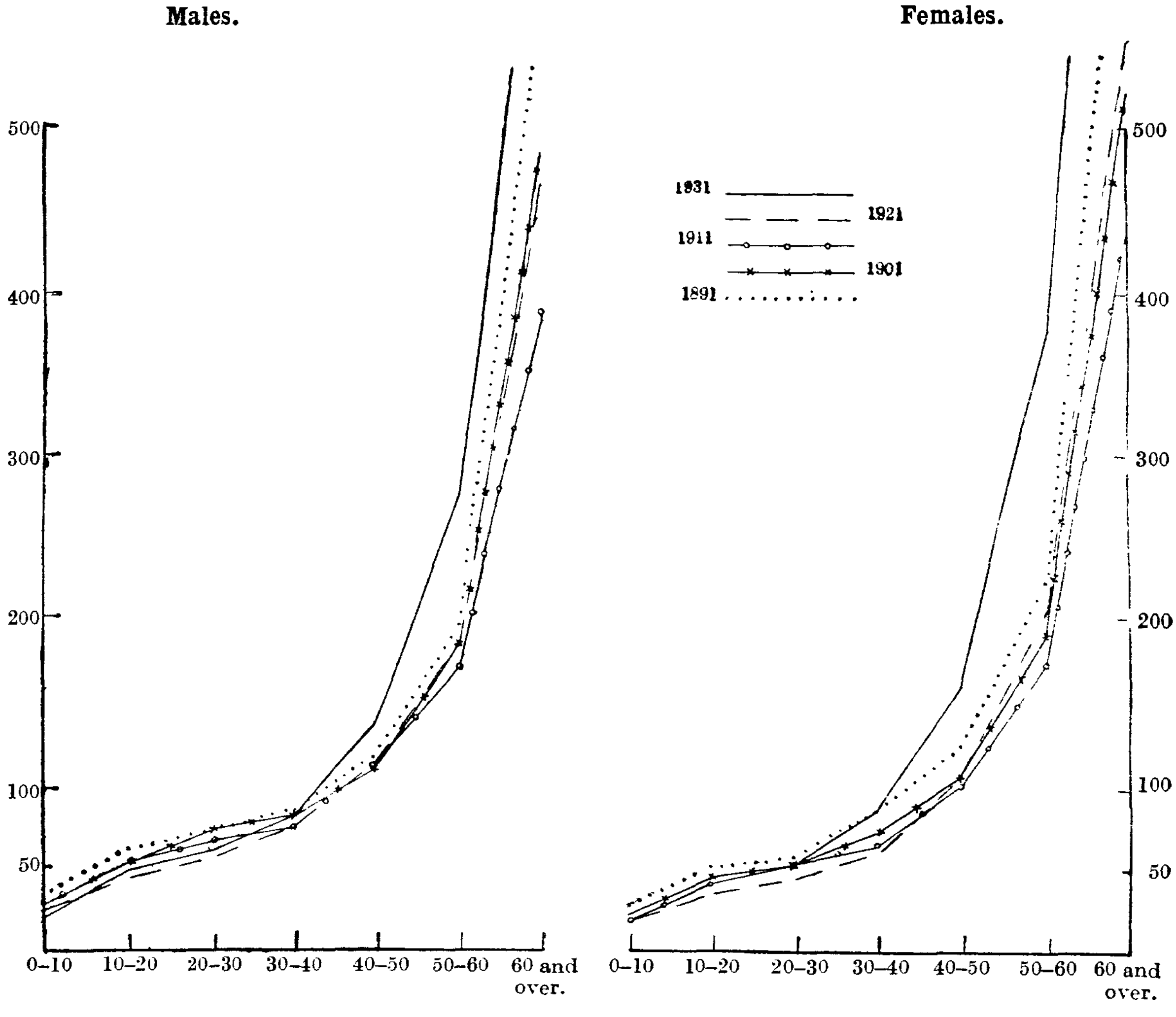
Helio-zinco, Survey Office, Madras
1932

Deafmutism is generally associated with goitre but whatever the facts of this association may be elsewhere, there exists nothing to show that in the Madras Presidency at any rate goitre can be anything but a very minor circumstance. No precise survey of goitre has ever been made but it appears to prevail sparingly on the slopes and submontane tracts of the western ghats and in Coimbatore. It is very rare in the Nilgiri hills and in this respect these hills are peculiar. It occurs in North Arcot along the valley of the Cheyyar river near Arni, in Tinnevelly by the Gulf of Manaar and has been reported recently also from Malabar. None of these areas is more markedly affected with deafmutism than the rest of the presidency and some, e.g., Coimbatore, Malabar and North Arcot, are definitely less so. The position of North Arcot is peculiar, for ten years ago it was the most affected and now is among the least.

Deafmutism can be divided into two main branches due to error in development or to inflammatory conditions. Under the second class there are four groups, due to injury, congenital syphilis, meningitis, and inflammation of the middle ear. The first is slight. The second is probably a more common cause in Madras than is realized although no data exist to prove or expand the theory.

Blind per 100,000 *of population by ten-year periods.*

Blindness.



15. In the map giving the distribution of the blind, the Circars, the Ceded Districts and the extreme south show the darkest colouring, i.e., highest incidence. Allocation to birthplace of the inmates of the homes for the blind would not affect the shadings. Ganjam plains retains the primacy it had in 1921 but Tinnevelly, Malabar and North Arcot have all to yield place now to Anantapur which with 152 per 100,000 comes second to Ganjam's 177. Several districts now exceed Malabar in blindness incidence and 20 out of 29 (counting the Agencies as separate districts) have more than one in a thousand of their population blind. There are some exceptions to the general tale of increase.

In Chingleput, North Arcot, Coimbatore and the Nilgiris incidence is less than in 1921; in Salem, Malabar and Madras it is practically the same. Elsewhere it has increased considerably, in Kistna and West Godavari by nearly 100 per cent and in Anantapur by 60 per cent. The considerations at the end of paragraph 6 were applied to the figures for Ganjam, Vizagapatam and Tinnevelly. The curtailing of sorting necessitated by retrenchment made it impossible this year to arrive at a natural population for these districts but by using the figures for 1921 and applying the decennial increase an approximation to the natural population was achieved. Applying the blindness return to this, the Ganjam plains rate becomes 150 per 100,000, Vizagapatam's 108 and Tinnevelly's 139. When these are compared with 177, 131 and 142 per 100,000 calculated on the actual population, the effect of heavy emigration is seen.

The general incidence is much above that of 1921. The relative district figures show no striking change. Madras was in 1921 the only district with a rate less than 50 per 100,000. It is now joined in this category by Sandur and the Nilgiris. In 1931 as in 1921 there is a steady increase as one proceeds south on the route Salem-Trichinopoly-Madura-Ramnad-Tinnevelly. Tanjore rate is slightly above that of 1921. In the Ceded Districts, Kurnool and Anantapur continue more affected than Bellary but this time Anantapur has the highest rate and Cuddapah comes within the same class as Kurnool.

The differences in the three Agencies are here, as in other considerations, of much interest. Ganjam Agency returns only half the blindness rate of its plains, whereas Vizagapatam and Godavari Agencies' rates are above those for the adjoining plains. The closer approximation of the two last groups may be taken as illustrating the closer connection which exists between the two tracts there than in Ganjam and the greater degree to which these agencies are peopled from plains sources and influenced by the plains in life and habits. In other words these Agencies are less primitive.

Sex incidence.

16. Blindness is the only infirmity in which females are the more afflicted sex. The figures per 100,000 are 105 for males and 116 for females. In 1921 the corresponding figures were 87 and 86. Thus the incidence is now greater among females as compared with a greater male rate in 1921. In only five districts, Bellary, Madras, Chingleput, Tanjore, Tinnevelly (and in Pudukkottai State) do the male blind exceed the female. The same applies to the Nilgiris and Sandur but the figures there are too small to support any deductions or conclusions. Only in Tanjore and Tinnevelly however of these districts is the difference appreciable. In Bellary, Madras and Chingleput the total males exceed the females and the blindness ratio is almost equal, viz., Bellary 127 : 126, Madras 48:44, and Chingleput 74:75, the male rate being given first. Thus even in Chingleput females are really more affected. In Chapter III it was shown that Tinnevelly had probably over 130,000 absent at census time. Emigration from this district is predominantly male and to assume 100,000 of these absentees to be males would not be excessive. Applying this to the blindness figures the relative sex incidence approaches close to parity. Allowance for emigration produces a similar result in Tanjore.

The disparity in sex incidence is much greater in Ganjam, Kistna and East Godavari plains than elsewhere, the ratios being 156:196, 99:162, and 88:111. Assuming that the blind are not likely to take any appreciable part in emigration, an artificial enhancement of male blindness incidence may be expected in districts from which a male exodus is marked; this finds illustration in Tinnevelly and Tanjore. Emigration is a feature of these Circars districts also and is predominantly male. This is particularly the case with Ganjam which had probably 80,000 of its people in Burma at census time. Yet, far from male incidence being greater it is in greater defect than in any other region of the province. Apparently, therefore, particular causes of female blindness are at work. Ganjam plains is regularly the most afflicted district in the presidency. A large portion of this district is inhabited by a people totally distinct in origin and habits from the peoples of Madras Presidency whose conditions are reflected elsewhere in the map. The Oriya is more backward and obscurantist. Purdah prevails far more than among South

Indian peoples and only women of the lowest classes are seen in public. The use of eye cosmetics is more marked, smallpox has a strong hold and so have ignorant physicians. Several potential causes of blindness lie in this list, affecting particularly women. Aska and Surada, a region of great heat and glare, where vast sandy river beds afflict the eyes for months on end, return the heaviest infection, 225 per 100,000. This region is also the Oriya focus of the district. The heavy female infection and the difference between Ganjam and the rest of the presidency might therefore be related in part to differences in the inhabiting peoples.

Subsidiary Table *iii* and the diagrams show clearly that the excess of blindness among women is not a continuing feature at all ages. Up to 35 the male infection is greater and up to 15 pronouncedly so. The ages are significant : one corresponds to immediate post-puberty, the other to the climacteric, the approach of old age. The numerical superiority of female blind is really an illustration of a point already mentioned, viz., the cumulative aspect of blindness returns considered with age ; blindness is in some respects practically a function of advancing age. Women live longer than men ; we might expect therefore that old women being more numerous would make a greater contribution to blindness than old men.

17. The most interesting points in the blindness curves however are the changes in slope. For males the increase in steepness begins at 30—40 ; for females it begins earlier, at 20–30. Thus while juvenile blindness is more a male phenomenon, the further onset in adult life comes earlier for women than for men. Several considerations bring this into accord with observed facts. Women spend much of their time in smoky, ill-lit and ill-ventilated houses, conditions inviting affections of the eye. It is after they are married and settled down to family life that these conditions are imposed most strongly upon them. Men on the other hand spend more time out of doors and are more ready to seek treatment and alleviation.

18. As already mentioned the blindness curves show no peak, illustrating in a marked way that blindness in itself has no lethal effect.

Blind Schools—Inmates.

	1921.	1931.
Victoria Memorial Blind School, Poonamallee	..	46
United Lutheran Church Mission School for the Blind, Rentichintala, Guntur..	17	37
C.M.S. Industrial School for the Blind, Palamcottah	53	208

19. A list of institutions for the blind is given in the margin with the number of inmates at the beginning and end of the decade.

District variation.

20. It might be expected that famine areas would tend to exhibit more deficiency disease and that this by showing itself as keratomalacia would bring a comparatively greater incidence of blindness. It is not possible to relate all the heavier district incidences to this but the map shows that Anantapur has one of the two black areas and its neighbours are all in the darker zone. This belt, and Anantapur possibly most of all, is the famine zone of the presidency where fear of crop failure and scarcity is never far off. Although Ganjam has known periods of scarcity its high incidence could hardly be related to these considerations. Ganjam plains collect large numbers of beggars, mostly diseased, on their way to or from Puri and these contribute to the blindness return. In general, it might be expected that greener, shadier lands free from high winds and dust would show a less incidence of blindness. Examples would be the delta districts of East Godavari and Tanjore and the pleasant downs and valleys of South Kanara as compared with the glaring stretches of the Deccan. The steadily lower rate of infection in Bengal presidency than in Madras might be referred in part to the same general explanation. The Bombay infection rate of 179 per 100,000 is much above that for this presidency. This too possibly reflects the difference in natural conditions. The map does in fact show the two delta regions among the less and the Deccan among the more infected areas but Salem and Coimbatore with perhaps as much glare and probably more wind than any other districts in the presidency are among the least affected areas for blindness. All infirmities run lower in these districts at this census and there may be some peculiarity in enumeration at the back of the differences.

It is true that Coimbatore is well off in medical men and facilities for treatment but the discrepancy calls for some further enquiry. Intensity of blindness infection does not accompany density of population ; for Ganjam and Anantapur, by far the most heavily affected districts, are by no means the most densely populated : Anantapur in fact is among the lowest in density. Tanjore and Chingleput both stand high in the density ranking ; both are low in blindness. Taluk figures were taken out in the districts of greatest incidence. In most cases these were grouped in a normal way round the mean but occasionally distinct indications of regional prevalence emerged. Thus, the Bobbili, Parvatipur and Palkonda area of Vizagapatam plains has a remarkably higher blind rate than the rest of the district and the same feature extends into the Parvatipur agency portion. Naurangpur and Jeypore are more affected than the remaining agency taluks. The western taluks of Bellary showed an incidence markedly below that of the others while the highest figure came from the Mysore border. In general, a distinct tendency was observable for the barer and harsher taluks to return a higher blindness incidence.

21. The diagrams above show that from age 30–40 onwards for both sexes 1931 returned a higher proportion of blind to the general population than was returned in other censuses. Before that point the curves run on the whole below those of all other censuses except 1911 and the male curve is below even this at age 0–10. This may be taken as indicating that the proportion of blind among children is diminishing, a welcome feature if true. The uniformity in shape of the blindness curve for all five censuses has already been commented on.

Preventable causes.

22. The chief tragedy of blindness is that so much of it in India (probably more than half) is preventable and that the majority of incurably or partially blind become so when infants or young children. We are apt to dwell too much on cataract and the more spectacular manifestations of blindness and forget the large share which parental folly and neglect, improper food and housing play in producing the 50,000 blind recorded in this presidency. Blindness from cataract despite the large number of cases is of less real importance in the life of the community, is generally associated with advanced years and is curable. Even if no cure is effected the victim has had during the useful stages of his life the power of sight. Ophthalmia neonatorum, syphilis, smallpox, keratomalacia, on the other hand, as causes of blindness all mark their victims before adult years are reached and the loss and burden they bring on the community are difficult to assess. In the first two the fault of the parents is complete. It is their disease which appears as blindness in their child and if all parents established their own soundness before begetting children blindness of this sort would vanish. Ophthalmia neonatorum is in any case preventable after birth by a simple precaution which every woman ought to know but which many including 'dais', unfortunately do not. Indeed it has frequently been discovered that a fully qualified doctor or midwife had been present at the birth of a child subsequently produced for treatment of this affliction. Blindness from smallpox is simply neglected vaccination and parental responsibility runs high. It is higher still when we consider the blindness caused by violent irritants put into the eyes to rouse the child or cure some simple ailment. Chewed red pepper, tobacco juice, red-hot coals, strong solution of alum, all seem preposterous to Western ears, but all are frequently put into the eyes of Indian children with generally the tragic result of blindness. The application of irritants is probably at least as great a cause of blindness in India as ophthalmia neonatorum. Misfortune comes to all but there is something peculiarly tragic about misfortune occasioned by another's folly.

23. Keratomalacia and trachoma come in a different category and the latter is a disease of adults as well as children. Its precise cause is not yet known but it is usually associated with bad housing and ventilation. In the opinion of Colonel Wright trachoma is not in India nearly so serious a cause of blindness as in other parts of the world. This may reflect the fact that the Indian house is often much more a receptacle than a dwelling in the European sense and much of the occupants' day is actually spent in the open air.

24. Keratomalacia is in the opinion of Colonel Wright the greatest single cause of preventable blindness in India. This is not generally recognized. In Madras blindness is a more common sequel to it than to ophthalmia neonatorum. It is really a multiple-deficiency complex in which ophthalmic features, however noteworthy, are but localized signs. Its chief primary ætiological factor is apparently lack of fat-soluble vitamin A in the diet, and its prevention lies in proper feeding of children. It is thus linked by cause to the wide range of ailments that begin in malnutrition and it is a significant pendant to McCarrison's views on the merits of India's various diets that whereas keratomalacia is common in the rice-eating south and the Ganges valley it is practically unknown in the wheat and milk consuming Punjab. A large proportion of the poorer population of this presidency is in what McCarrison would call the twilight zone of nutrition where a small change in dietary may precipitate a deficiency disease. Colonel Wright brought to notice in 1925 a sudden precipitation of keratomalacia in adults who had acquired liver disease.

25. The mode of operation against these preventable causes of blindness is more obvious in some cases than in others but in all propaganda plays a large part. This has been realized and for some years past much has been done by oral and pictorial exhortation to make more widely known what the public should do to reduce or remove preventable blindness. Keratomalacia presents a difficult problem and is not separable from the very much wider economic problem represented by the low standard of living and unsatisfactory dietary prevailing in so large a part of the population. Its prevention is in fact primarily an economic question. The same apparently applies to trachoma. The above causes of blindness which operate so heavily in the first five years of life have a profound influence on the actual total number of blind persons and if they were reduced to proper proportions the blindness diagram would undergo a marked alteration.

Cataract.

26. Cataract and glaucoma, heavy causes of blindness, are in a totally different category from those already mentioned inasmuch as they are associated with old age and make themselves apparent with its approach. The blindness diagrams illustrate this clearly in the greatly intensified upward slope of the curves in the later age periods. In cataract and in all blindness which supervenes in the later stages of life a cumulative action has been at work. The results of varying causes or predisposing conditions may ultimately sum themselves up in a cataract. Cataract whatever its ætiology is one of the chief contributors to our census blindness figures. It heads the list of blinding affections in this presidency, totalling almost ten times that of the next cause so far as hospital returns show. It is likely however that cataract cases come more to medical cognizance than others because of the fairly general knowledge that this condition can be cured or ameliorated. Probably therefore the hospital returns tend to exaggerate its importance. Even so that importance remains considerable enough. The Ophthalmic Hospital, Madras, for instance, has a regular 20–30 cataract operations per week. The small table in the margin shows the number of operations carried out in the presidency institutions during the calendar years and decades corresponding to the censal periods. The ten years 1921–30 show more than twice the total of the preceding decade. The general knowledge that cataract can be treated surgically has an unfortunate illustration in the prevalence of the operation known as 'couching'. This is a practice of vaids and hakims of merely pushing into deeper parts of the eye, the cloud or 'flower' which constitutes the cataract. There it may, and frequently does, cause much injury even though it can no longer be seen. European surgical practice is to remove the cloud altogether. Careful investigations made at the Ophthalmic Hospital,

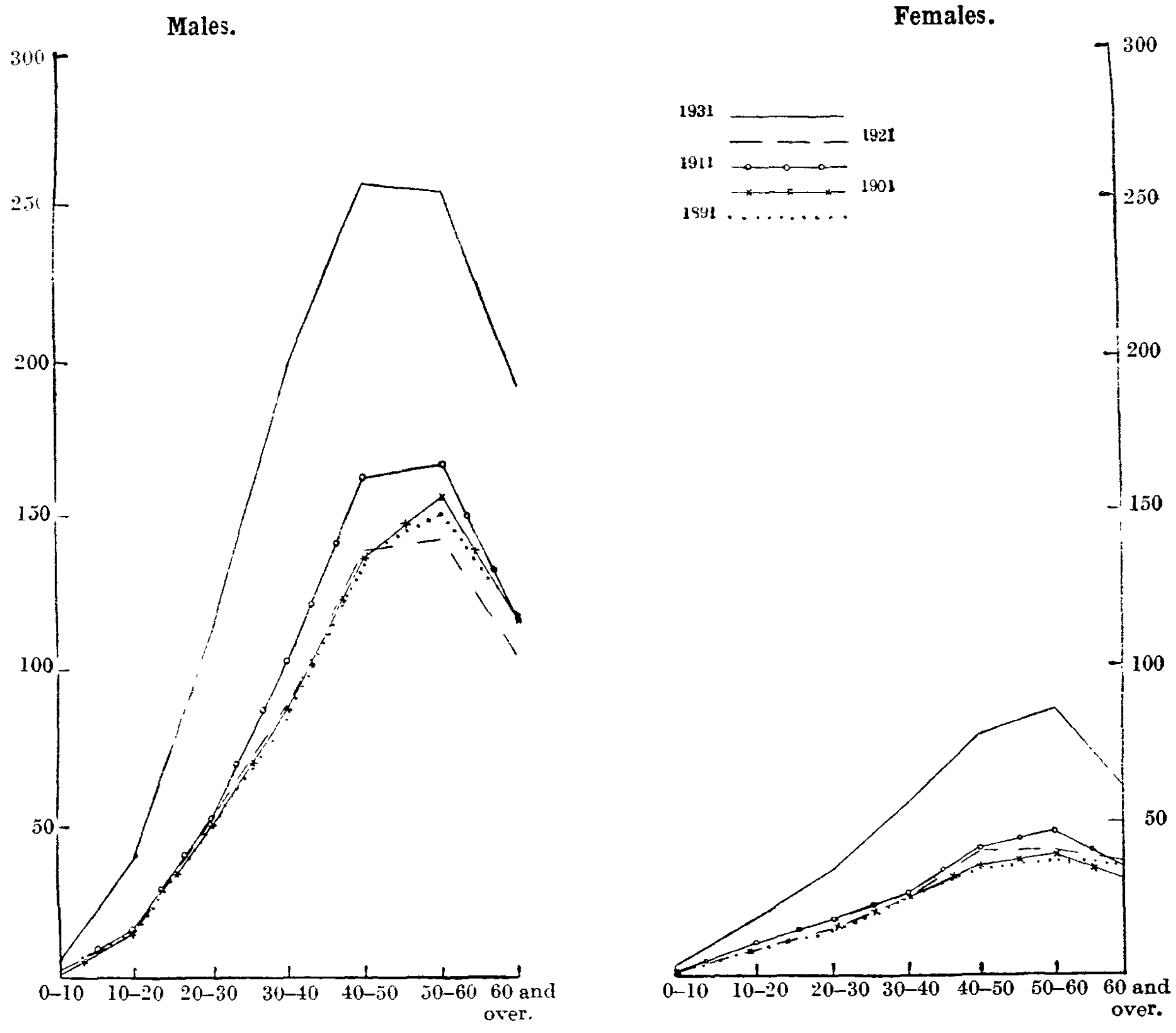
Cataract (Extraction of lens).

Years.	Total number of operations.	Number successful (cured).
1901–1910 ..	**13.422**	**12.312**
1911–1920 ..	**20,102**	**18.156**
1921–1930 ..	**40.710**	**37.462**
1921	3,217	2,831
1922	3,111	2,871
1923	3.335	3.023
1924	3,908	3.661
1925	3.846	3.497
1926	4.330	3,930
1927	4.676	4.299
1928	4.661	4.205
1929	4,737	4.448
1930	4,889	4.706

Madras, showed that out of 836 persons whose cataract had been couched only 176 had retained useful sight. The success return from proper surgical practice, on the other hand, is 90 per cent, and even of the remaining 10 per cent most derive benefit from the operation. Here again propaganda is the only remedy and this point is dealt with among others in the literature issued by medical officers in Madras.

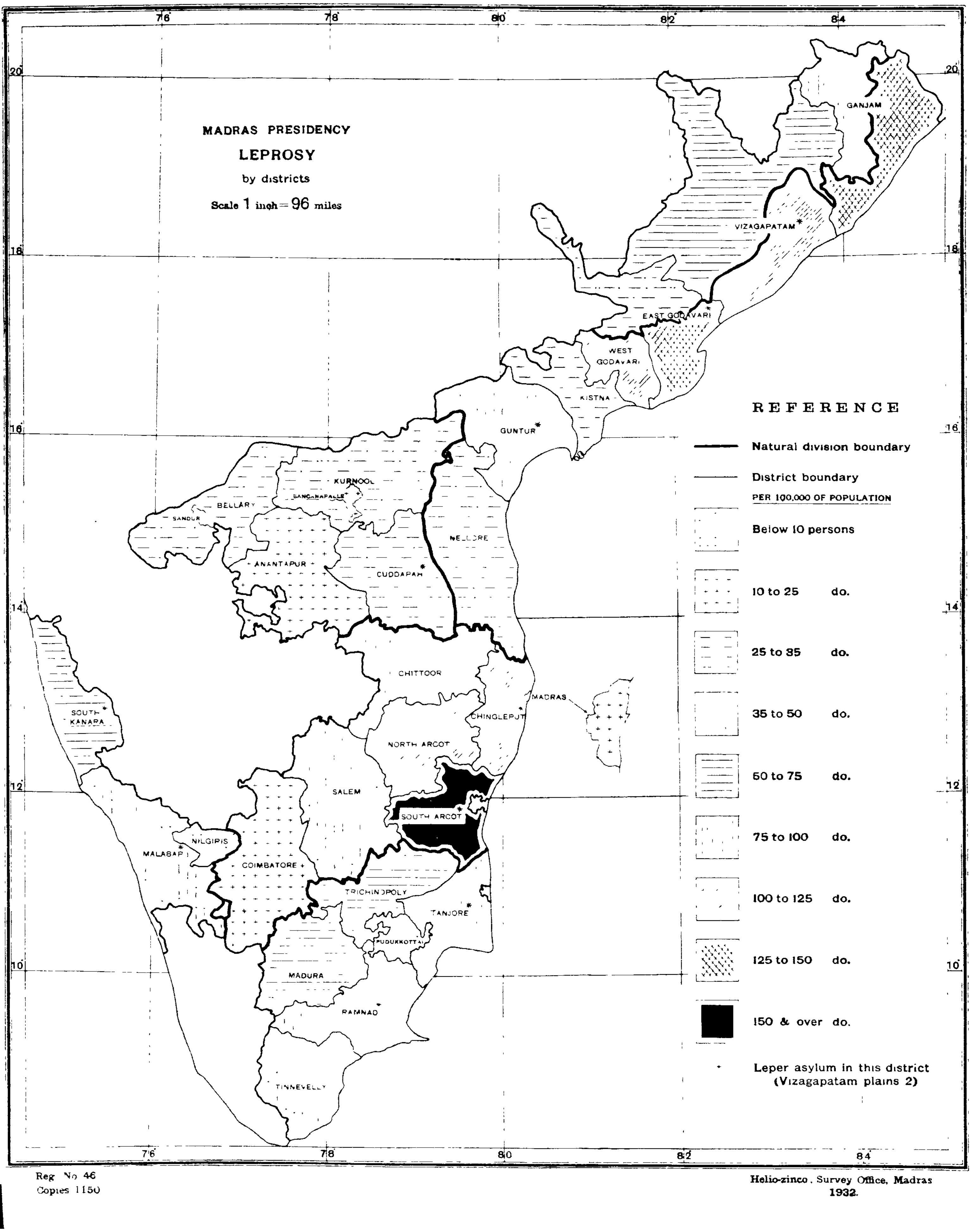
Leprosy.

Lepers per 100,000 *of population by ten-year periods.*



27. The map throws into bold relief South Arcot as the district most infected with leprosy. In 1921 also it was pre-eminent. Its immediate neighbours to the north and south are as in 1921 among the darker areas. Coloration as in 1921 lightens as far as the Nilgiris, then grows darker again leaving Coimbatore as a region of very low incidence. The more northerly circar districts stand out as the second region of heavier infection, a zone in between representing the Ceded Districts, Nellore and Guntur; Anantapur has the lowest incidence in this group.

28. Leprosy is probably (because of its contagious nature and the ignorance as to its real extent) the most important for this province of the four infirmities dealt with. The ordinary citizen's acquaintance with it is limited to the deformed and ulcerated beggars seen by the roadside in large towns or at festivals. Actually these are not the cases of most vital concern to the community. Such cases are usually ' burnt-out ' : the leprosy flame has raged in them but has passed leaving destruction but also no spark that might set others afire. However hideous they may be, they are harmless to the community and there is no object so far as public health is concerned in isolating them. They are true subjects for charity inasmuch as the majority of them are unable to work for themselves, have been disowned by their own relatives and have no resource but begging. They are in fact outcasts



Reg No 46
Copies 1150

Helio-zinco, Survey Office, Madras
1932.

and it is significant of the universality of this attitude towards lepers that the term leper is in English a synonym for some condemned person thrust out of the ordinary pale of intercourse. Leprosy has many resemblances to another insidious disease, tuberculosis. They are alike in their bacillary origin. Both are chronic diseases usually slow in onset and in course. In both it is difficult to say when the bacillus has been banished from the body and in neither is a 'cure' strictly speaking ever achieved, for every one attacked is left with some tissues damaged. A notable point of similarity is that both are diseases of semi-civilization. Any one in any state of life may be attacked by either but it is rare for true aboriginals or persons leading a primitive life with simple standards of morality or food to be attacked by leprosy. The disease is of rare occurrence also among the better educated and more prosperous classes. It is, one might say, in the contact zones that these diseases have their widest range. Where a primitive mode of life is in contact with a more advanced, where simple habits have been modified but adaptation is not complete, leprosy finds a wide field. Coolies and factory hands provide the bulk of the specimens. In these cases a new mode of life is in most obvious impingement upon a simpler predecessor. For illustration of the above point a glance at the leprosy map will suffice. The infection rate in the Agency tracts is only half or less than half of that in the adjoining plains.

29. Other similarities between the two diseases are that debility predisposes to both as do deficient diet, harmful habits, certain other infections and probably a warm, moist climate. The map shows heavy infection in the Circars coast, in South Arcot, and in general that leprosy is more rife in the coastal tracts than in the interior. Witness the much lower rates of the Ceded Districts, Salem and Coimbatore. A last similarity lies in the part played by the general public in coping with the disease. Much of the campaign against tuberculosis in the west lay in propaganda against unwise habits and practices which tended to encourage or spread it. The same applies to leprosy and it is for that reason propaganda plays so important a part in the campaign recently launched in this presidency against it. Doctors possess no final cure for leprosy ; no specific is yet known. On the other hand so much have methods of treatment improved in range and efficiency as the result of intensive study and experiment that if a case is secured early enough the disease can in all probability be arrested, the person made non-infectious, able to lead a normal life and probably continue to work for his living. The vital part to be played by propaganda becomes obvious and the undesirability of any mention or advocacy of extreme measures appears at once. *Ex hypothesi* what is essential is to induce every person who even suspects that he may have leprosy to come forward at once for treatment. If he has any grounds for imagining he may be forcibly segregated, the chances are that he will not come forward and that even when the disease declares itself unmistakably he will conceal it as long as he can. The keyword is confidence. There is no compulsory segregation or detention anywhere in the presidency. Admission to leper hospitals is mostly on the direct application of the patient. The only alteration in policy during the decade has been for hospitals to confine their attention more to active cases. A good leper hospital nowadays has 70–80 per cent active cases ; not very long ago quite a reverse proportion was the rule. One corollary of the above considerations is that leper homes and hospitals should deal with and be reserved for active cases instead of being receptacles for the burnt-out and deformed but no longer dangerous victims. The Surgeon-General suggested that when the Mettur project was completed and the buildings there no longer required a missionary body or charitable agency might be encouraged to use this area and its amenities as a home for these burnt-out leper cases.

When skilled treatment is available villagers show no hesitation in making use of it. An interesting commentary on the readiness with which the populace present themselves is found in the Surgeon-General's application for inclusion in the staff required for a certain clinic of 'a boy to regulate the crowd'. 500 patients were undergoing treatment at the time and the congestion must have been considerable. Leprosy survey officers found a remarkable proportion

of the infected persons already known as such to the villagers ; the scanty attire of the Adi-Dravida, for example, makes it difficult for infection to escape notice. This would indicate that what is lacking among the public is not so much a knowledge of the existence of the disease as a realization of its gravity.

Anti-leprosy campaign. 30. A glance at the curve shows immediately how greatly the figures for leprosy have increased at this census. Subsidiary Table *i* shows that leprosy now gives the highest male infection rate for any of the four infirmities in the province. Up to 1921 it had invariably come only third. The pronounced increase is mainly a reflection of the much more active anti-leprosy steps undertaken in the presidency during the decade and particularly in the two years immediately preceding the census. Half way through the decade the Surgeon-General of Madras pointed out that to attain any success against leprosy early diagnosis and treatment were essential. This is a general medical platitude but in the case of leprosy is more, for in this disease ability to diagnose in the early stages requires careful training and practice. The Surgeon-General's suggestion was to introduce out-patient treatment for leprosy in all headquarters hospitals and clinics were accordingly opened in six hospitals in different parts of the presidency. In 1929 the Madras branch of the British Empire Leprosy Relief Association decided to change its system of dealing with grants. Previously it had distributed the not very large sums at its disposal in small doles to leper institutions and hospitals where leprosy was treated. Applications for grants were increasing in number without offering in all or even in most cases prospects of serious contribution to anti-leprosy work. It was decided to apply the principle above indicated and to concentrate on training doctors to recognize and deal with the disease. The main objects were the opening of clinics, the training of health officers and doctors in diagnosis and treatment, spot surveys and general propaganda. A doctor working under the Association conducted surveys in South Arcot and East Godavari districts and the Madras Government appointed a leprosy propaganda officer to carry on his good work. The object is to establish ultimately a network of clinics throughout the presidency and by training at the same time local medical and health officers in the detection and treatment of this disease to ensure that these clinics function regularly and efficiently.

The drug most used is hydnocreol, because of its cheapness. In some institutions creosoted mixtures or esters of hydnocarpus or olive oil are also used. The Government Medical Stores, Madras, have arranged to prepare and supply esters to medical institutions at a rate much below that formerly required.

It may be said that an organized campaign has been opened in Madras Presidency against this disease. The province has been divided into six campaigning areas with a medical officer experienced in leprosy at the head of each. These will be primarily responsible for the conduct of the campaign in their areas and the first essential, viz., the training of as many medical men as possible in up-to-date methods of diagnosis and treatment is kept always in view. This, the opening of clinics, and propaganda may be said to sum the general strategy. Free leaflets on leprosy are distributed, illustrated by lantern lectures in villages and handed to patients who come for treatment.

Leprosy survey. 31. The Public Health Department have conducted a rough leprosy survey. The result of this showed 48,000 cases in the presidency, i.e., 1 in 1,000 of the population is a leper. If the expert estimate of a lakh is adopted, 1 in 500 of the population is afflicted. The results of the survey show interesting variations. For most districts, the number of cases put down by the Health Department exceeds those declared at the census. The exceptions are two of the Ceded Districts, the two West Coast districts, Tinnevelly and Coimbatore. The incomplete records for two taluks of South Arcot show already cases numbering over half the total ascertained at the census for all the eight taluks, so South Arcot may be safely taken as no real exception. Apart from Malabar and South Kanara the other four districts have hardly any clinics opened and returned at the census figures much below those of other districts. Infection is probably weaker in them in any case. In some districts there are

actually more cases being treated than were returned at the census. Instances are East Godavari, Chittoor, Madras, Salem and Madura. In East Godavari and Chittoor the number being treated is above even the returns from the Health Department's leprosy survey. In some districts the number of cases being treated is however very far below the number returned at either census or survey. Among these are Ganjam, North Arcot, Trichinopoly and Tanjore, where the number treated is only from three to seven per cent of the census returns. In Vizagapatam the figure is 10 per cent.

Two interesting details from the experience of a survey party are that out of 1,097 schoolboys examined at Villupuram in South Arcot, 3·67 per cent were infected and in East Godavari 5 per cent of factory hands were found to be lepers. These two areas yield perhaps *par excellence* the warm, moist climate usually held most favourable to the spread of leprosy, and a high density of population.

It was observed incidentally that in the areas where special surveys were conducted local quacks were taking advantage of the interest aroused to press the sales of their own secret remedies and much money found its way into the hands of one quack in particular in a vain search for cure.

32. The present attitude towards this disease represents a marked breakaway from previous practice. It could only be expected therefore that it should find some illustration in the census statistics. The census of 1931 followed shortly after the investigations by the Health Department. Consequently many cases of leprosy detected during this survey came more readily into the census record. In general, the fact of considerable propaganda against the disease must be taken to have had great effect in encouraging sufferers to abandon the policy of concealment which has operated considerably in the past and to a large extent operates still. The district which shows the heaviest leprosy infection at the census, South Arcot, is that in which Dr. Santra made the first survey and East Godavari which comes third in the census list in gravity of infection was the centre of the second enquiry and now possesses more clinics than any other district. In this district the survey party returned the incidence per 100,000 as 852. The census figure was 131. It is noteworthy that areas which show the least infection at the census had the fewest clinics then.

33. Another leprosy survey will probably be held five years hence and its results should be interesting and instructive. The survey just completed forms the basis of a system of registration which has been in operation from the beginning of 1932. Confidential registers will be kept by taluks; in these registers will be entered the names of afflicted persons already known. The names of fresh cases will be entered as detected. These registers will form the starting point for the next survey. Ultimately village registers will be opened and entrusted to the usual repository, i.e., village officers, who will have to enter any changes or information of importance bearing on this disease. If this scheme is carried out in its entirety and supervision is close, the five years ought to lead this presidency to a very close approximation to the number of lepers in its midst. If it is carried out strictly it should be possible ultimately to give up leprosy as a census determination altogether.

There are two leper asylums run in connection with the Madras jail system. To these all prisoners found to be suffering from leprosy are sent. Malabar, Ramnad and Madura appear as the largest contributors, Vizagapatam and the Godavaris being next. Such totals would have to be referred to the total number of prisoners from each of these districts before they could be used and would have to be in larger numbers but they are not without interest. Incidentally over a quarter of these cases were found also suffering from syphilis. This may point to another contributing cause of leprosy. Anything which lowers the vitality must lower resistance to leprosy infection and it would be odd if venereal disease did not make its contribution here as elsewhere. The various forms of deficiency disease so rife in the presidency must contribute also and some medical men attribute its prevalence to definite errors in diet, e.g., the inadequate amount of milk consumed on the West Coast. The same charge was made against Puri. Pyorrhœa is said in certain quarters to be a large contributor.

Dissemination.

34. Leprosy is a disease spread by contact and in all such diseases there is an obvious connection with density of population. It is notable that the leprosy survey conducted in East Godavari showed Ramachandrapur as the taluk of heaviest infection rate. Ramachandrapur is a delta taluk of extreme density of population. The same principle is illustrated by the light degree of infection in the Ceded Districts, an area of sparse population with consequent less crowding and less risk of infection. The dryness of the climate possibly contributes to lowering the incidence and it may be that delta areas are peculiarly favourable to its spread. The Agencies are an area of lighter incidence than their adjoining plains. Here the sparseness of the population contributes but the fact that a large element consists of primitive tribes must also be an important factor, for it seems to be the case that primitive tribes tend to be freer from leprosy. The survey parties found that a number of male patients attributed their infection to contact with leprous paramours or concubines. Apparently young women rejected on account of leprosy as unfit for marriage are allowed to have other relationships. The part played by such activities in the spread of the disease needs no stressing. In South Arcot one man with highly infectious leprosy was found undergoing the preliminary ceremonies of marriage. With the aid of the villagers the marriage was postponed for six months, an encouraging instance of communal action for the public weal. One village in Salem district has a number of male lepers to whom infection was conveyed through the ministrations of a leper barber. No further comment is required. In another village an actively infectious leprosy case was found sharing a hooka with the other men of the village ; this illustrates well the part played by ignorance in the spread of the disease. Leprosy is easily conveyed if the skin is already abraded. The bites of mosquitoes or leeches would provide such abrasion ; hence perhaps to some extent the greater prevalence of leprosy in backwater or canal areas such as are found in Malabar and the delta tracts and in general in areas where mosquitoes and similar pests are numerous.

35. It is however impossible really to allot any particular causal factor to the disease in any area. Several factors operate to determine the incidence and it is often difficult or impossible to say which is most at work. Racial factors enter, for, as above mentioned, primitive tribes tend to be freer and also the most civilized elements ; climatic conditions (the drier Deccan and central areas are less attacked than coastal tracts or deltas) ; social customs and economic conditions enter obviously and the amount of clothing normally worn is an important factor in reducing the chances of skin affection. Lastly the degree of movement has an obvious influence. Lepers are wont to resort to certain temples the gods in which are believed to have special interest in and powers over the disease. Such a temple is that of Chowghat in Calicut. Any centre of extensive pilgrimage or resort will find lepers in its midst attracted thither by the prospects of charity. The attraction of holy places for the diseased beggar is a commonplace of observation. There seem to be four chief foci in the presidency, (1) the north, (2) Guntur, (3) the Arcots and Salem, and (4) south-east Malabar. The map illustrates two of these in marked fashion by the darker coloration of the Circars coast and the Arcots. The true focus here seems to be North Arcot, for the expert survey in South Arcot found that the taluks bordering on the northern district were most heavily infected. An extension of the expert survey would probably determine this point. An illustration of the effect of communications in the spread of the disease is that the low incidence in Vriddhachalam taluk in South Arcot is attributed to the fact that until recently no railway line ran through this region at all. Vriddhachalam is now a railway junction of north-south and east-west routes and its leprosy incidence may on the above reasoning be expected to increase. The heavy incidence in Ganjam plains has been a continuing feature at all censuses. A leprosy survey carried out in the adjoining Puri district of Bihar and Orissa in 1929 showed very heavy infection to prevail there. 6,393 persons examined in Puri town yielded 288 lepers. On a base of 100,000 this is 4,504. Tangi Thana gave 1,133 and others 1,236 and 923 per 100,000. Puri is an ill-drained malarial and filarial district and every factor

seems favourable to the growth of leprosy. Homage paid to Jagannath was long held to be a cure. Hence the leper trek to the shrine by the sea and the creation of an endemic region there. For the Oriya tracts of Ganjam, the political boundary which divides the district from Bihar and Orissa is in no sense a social frontier. It is possible that part of Ganjam's high leprosy figure is due to the inclusion of other affections like leucoderma. A recent leprosy survey undertaken by the Public Health staff yielded less than a fourth of the census result. This is almost certainly an underestimate but it is probable that the true figure is below 149 per 100,000. In any case, Ganjam or at any rate, the Oriya part of it will probably always be one of the more affected regions of the presidency. Guntur seems to adjoin a heavily infected area in Hyderabad, its coastal areas being less affected than the inland. This bears out the theory that incidence decreases as we go from the focus. The dwindling infection southward from Arcot is particularly noticeable in the map. When leprosy clinics were opened in Coimbatore there was no such rush to attend them as is usually experienced. This bears out the impression given by the census figures that Coimbatore is much freer from leprosy than its neighbours.

Sex incidence.

36. One feature which differentiates leprosy to a marked extent from the other infirmities is the difference in incidence between the sexes. In the other infirmities the two contributions are not very far away from the 50 per cent line. In the case of the lepers the male contribution is thrice the female. This ratio 3 : 1 is of long standing and wide distribution, being returned from many parts of India for many years. Thus the India Census Report of 1911 comments upon it. It has been a custom in the past to attribute most or much of this differential infection to concealment of the disease among women and a common view was that such concealment might be most expected at the ages at which the difference between the sex infection rate was most pronounced, i.e., at adult years. It seems to me however that if concealment of female infection is in question, it is quite as likely, if not more likely, to be rife at the earlier stages, i.e., before a girl is married, and this would and does apply to all infirmities as it applies to anything which may hinder a girl being disposed of in matrimony. It is notable however that discrepancy in sex infection is very much less in the earlier stages. Acceleration in the slope of the curve comes after 10–20 in both cases but much more markedly so for the males. This period corresponds to the leaving of childhood behind and entry into the world of business and contacts. Change of activity is less for women than for men and the curve reflects this by a milder slope. The evener curve for females is mainly because woman's life is less exposed to contact with other people, spelling a greater liability to infection. A sex more exposed to casual and frequent contacts should show greater incidence of a contact disease. Indian customs make the movements of the female population very much less than those of males. They wear much more clothing and apart from actual movement from place to place they avoid contact more sedulously and regularly. These circumstances must contribute strongly to producing a different incidence for the two sexes. The other infirmities recorded at the census are not contact diseases and thus the great disparity is to a large extent explained. It may be that as was suggested in 1921 leprosy among females is more concealed than among males but I am inclined to think that undue weight has been given to this possibility.

The diagrams show that the peak for males has moved at this census. In all previous years the peak was at age 50–60. It was not usually marked except in 1901, but nevertheless undoubted. In 1931, it appears 10 years earlier. This is probably a truer indication of the point at which lepers begin to die off more quickly than the ordinary population, for it is unlikely that the effects of such a disease in this direction would be deferred so late as 50–60. The change reflects the great increase in the numbers appearing in the census returns. Instead of them being mainly or largely burnt-out cases mostly well on in years, a much larger proportion of active cases and younger patients now enters the record. The peak for females continues at 50–60. The disease is

less marked among women and a later acceleration in onset may produce a later peak. Probably, if all female lepers entered our records, the peak for this sex too would come earlier though not so early as for males.

General. 37. The census deals with ' infirmities ' but the singular is really a better aspect. Diseases cannot be compartmented and the census treatment is apt to obscure the fact that even these four, widely different as they seem, have close inter-relations. Venereal disease is protean in the forms of its derivative appearance and its touch is strong in blindness and insanity and probably also in deafmutism. Deficiency disease is rife in the presidency and enters into the pre-history of the majority of cases of every specific disease which appears for treatment. Practically all patients entering Government hospitals suffer from some pathological condition of the alimentary canal. Pyorrhœa, dysentery and so on are rife while hookworm and ascariasis are universal. Hookworm is endemic, the infection rate varying from 10 to 90 per cent with a presidency average of 73. Much intensive work and study have been done on this during the decade and the presidency had the benefit of an anti-hookworm campaign under skilled direction. This began with two years' work in North Arcot which confined itself to a treatment and publicity campaign. This in the end was given up as producing no essential change in conditions and the alliance of an official or quasi-official body was sought and secured in the Madura District Board. It is probable that the practical demonstrations begun in Usilampatti in that district under the ægis of Mr. Foulkes have done more really to establish a readiness on the part of the public to co-operate in the campaign against hookworm than any other single effort. The two years in North Arcot had at least the result of showing that hookworm control is essentially a matter of control of soil pollution. The hookworm survey conducted in Madras Presidency was one of the largest done anywhere, over 58,000 egg counts being carried out. The district incidence varied greatly but the connection between rainfall and hookworm infection was clearly made out ; hookworm is never likely to attain any seriousness in the Ceded Districts and those in the centre of the presidency, whereas Malabar with almost every circumstance in favour has a degree of infection twice or thrice that of any other district. More local bodies are taking up the installation of proper latrines and encouraging their use among the population but while progress is good a great deal remains to be done. Special attention was paid to estate cooly lines which were for long absolute foci for the disease and the ameliorative effect of the campaign there has probably gone far beyond the bounds of the estates. It was interesting to read of one admission by a cooly treated for hookworm that he felt ' brisker in the morning '. How after all could the benefits of hookworm treatment be better described ? The object of public health men throughout the country must be to induce this brisker morning feeling. The anæmia due to hookworm, not to mention other manifestations, has a wide range and certain types of cataract even seem to be associated with it, or at any rate with intense anæmia. Comment is made in one administration report of the Ophthalmic Hospital, Madras, of difficulties due to out-patients interfering with dressings as a result of the irritation caused by bugs. Relapsing fever, which took a considerable toll in the earlier years of the decade in some parts of the presidency, is due to lice and plague to fleas. These facts illustrate that infirmity is a more fundamental study than infirmities and that most diseases go back to standard of life and habits.

38. In writing this chapter I have to acknowledge with gratitude suggestions and counsel given by, in particular, Major-General Sprawson, Surgeon-General with the Government of Madras, and Lieutenant-Colonel Wright of the Government Ophthalmic Hospital in Madras.

* *i.—Infirm per 100,000 of total population.*

INSANE.

Natural division.	Males. 1931.	1921.	1911.	1901.	1891.	Females. 1931.	1921.	1911.	1901.	1891.
1	2	3	4	5	6	7	8	9	10	11
Province ..	***39***	***24***	***24***	***23***	***25***	***27***	***17***	***17***	***15***	***18***
Agency	26	15	14	19	17	21	10	10	11	11
East Coast, North ..	38	24	24	26	29	29	17	17	19	22
Deccan	37 (*39*)	22	22	24	23	32	15	14	15	17
East Coast, Central ..	36 (*34*)	24	23	21	23	23 (*22*)	16	16	13	15
East Coast, South ..	38 (*39*)	20	22	18	20	25	13	15	13	14
West Coast	56 (*57*)	39	35	28	40	39	29	25	20	29

DEAFMUTE.

Natural division.	Males. 1931.	1921.	1911.	1901.	1891.	Females. 1931.	1921.	1911.	1901.	1891
Province ..	***81***	***58***	***87***	***74***	***87***	***62***	***44***	***68***	***55***	***65***
Agency	46	15	51	50	53	36	13	42	39	37
East Coast, North ..	83	41	89	74	100	62	30	66	53	77
Deccan	86	20	86	80	94	70	17	69	60	67
East Coast, Central ..	74	77	93	80	93	58	60	73	59	68
East Coast, South ..	98	74	96	72	92	72	56	74	58	71
West Coast	73	54	65	61	33	53	40	52	45	25

BLIND.

Natural division.	Males. 1931.	1921.	1911.	1901.	1891.	Females. 1931.	1921.	1911.	1901.	1891.
Province ..	***105***	***87***	***83***	***91***	***101***	***116***	***86***	***79***	***88***	***104***
Agency	102	59	63	95	75	140	66	65	94	71
East Coast, North ..	111	73	71	88	100	145	78	67	91	102
Deccan	132	90	88	107	117	142 (*143*)	83	69	96	113
East Coast, Central ..	83	87	75	78	88	90	89	75	75	96
East Coast, South ..	117	98	93	88	97	108	86	88	86	108
West Coast	103	109	117	121	133	106	109	113	108	123

LEPER.

Natural division.	Males. 1931.	1921.	1911.	1901.	1891.	Females. 1931.	1921.	1911.	1901.	1891.
Province ..	***107***	***56***	***62***	***54***	***53***	***35***	***19***	***20***	***17***	***18***
Agency	90	53	57	79	71	40	29	25	34	29
East Coast, North ..	134	64	69	60	62	45	22	22	20	20
Deccan	35	15	19	29	29	16	7	8	8	9
East Coast, Central ..	129 (*127*)	66	72	60	56	41	21	22	17	16
East Coast, South ..	98 (*99*)	51	59	42	37	27	14	17	13	13
West Coast	69	49	61	63	82	26	18	23	25	31

* Where allocation to actual birthplace of inmates of asylums affects any figure, the adjusted figure in italics is enclosed in parentheses beside the original.

ii.—(a) Infirm per 100,000 *and* .. .. .. } *at certain age periods.*
(b) Female infirm per 1,000 *male* .. .. .. }

Age.	(a) Infirm per 100,000. Insane. Males.	Insane. Females.	Deafmute. Males.	Deafmute. Females.	Blind. Males.	Blind. Females.	Leper. Males.	Leper. Females.	(b) Female afflicted per 1,000 male. Insane.	Deafmute.	Blind.	Lepers.
1	2	3	4	5	6	7	8	9	10	11	12	13
Total ..	***39***	***27***	***81***	***62***	***105***	***116***	***107***	***35***	***719***	***777***	***1,136***	***333***
0–5	2	2	29	24	17	13	2	2	1,037	848	776	922
5–10	13	10	94	74	35	25	10	8	762	773	710	788
10–15	19	16	107	84	42	34	21	13	813	747	772	590
15–20	38	27	111	79	57	48	68	27	781	770	914	439
20–25	49	29	108	72	60	47	91	31	696	791	921	402
25–30	66	35	96	68	64	55	139	41	605	798	970	331
30–35	72	39	88	64	69	65	174	49	565	757	977	291
35–40	69	48	78	58	96	103	226	65	657	700	1,017	270
40–45	65	52	73	59	117	128	247	73	738	751	1,021	276
45–50	61	49	67	55	167	209	270	85	766	787	1,195	301
50–55	58	48	63	53	213	273	269	88	812	829	1,264	323
55–60	48	47	57	50	361	501	232	83	972	874	1,393	358
60 and over	42	40	59	49	772	974	191	63	1,000	866	1,318	347

iii.—Age distribution of 10,000 infirm.

INSANE.

Age.	Males.					Females.				
	1931.	1921.	1911.	1901.	1891.	1931.	1921.	1911.	1901.	1891.
1	2	3	4	5	6	7	8	9	10	11
Total ..	*10,000*	*10,000*	*10,000*	*10,000*	*10,000*	*10,000*	*10,000*	*10,000*	*10,000*	*10,000*
0–5	91	92	79	95	109	131	100	103	91	175
5–10	446	393	428	501	427	473	420	476	461	457
10–15	597	600	721	772	602	676	690	846	802	663
15–20	847	704	769	707	751	920	718	883	846	832
20–25	1,086	917	1,031	940	1,083	1,051	1,022	1,048	983	961
25–30	1,374	1,309	1,074	1,091	1,211	1,155	949	989	1,026	930
30–35	1,413	1,433	1,332	1,462	1,518	1,110	1,227	1,057	1,347	1,344
35–40	1,185	1,175	1,051	1,161	1,067	1,083	877	880	745	908
40–45	964	1,019	1,070	1,171	1,131	989	1,161	1,200	1,208	1,225
45–50	671	677	725	630	558	716	687	624	606	602
50–55	518	610	706	700	636	585	891	823	766	795
55–60	317	339	342	240	260	428	306	362	303	236
60 and over ..	491	732	672	530	647	683	952	709	816	872

DEAFMUTE.

Age.	Males.					Females.				
	1931.	1921.	1911.	1901.	1891.	1931.	1921.	1911.	1901.	1891.
Total ..	*10,000*	*10,000*	*10,000*	*10,000*	*10,000*	*10,000*	*10,000*	*10,000*	*10,000*	*10,000*
0–5	507	300	407	494	447	554	363	426	521	492
5–10	1,507	1,243	1,461	1,740	1,562	1,500	1,226	1,398	1,725	1,596
10–15	1,579	1,502	1,632	1,776	1,335	1,520	1,423	1,613	1,652	1,150
15–20	1,187	1,159	1,309	1,222	1,151	1,177	1,106	1,279	1,182	1,162
20–25	1,149	1,011	1,174	987	1,186	1,170	1,109	1,219	1,011	1,272
25–30	960	1,052	940	919	910	987	919	922	929	897
30–35	829	943	838	926	885	806	838	877	986	881
35–40	638	634	564	526	515	575	599	515	461	433
40–45	512	607	614	583	630	495	638	664	603	589
45–50	353	386	339	261	281	357	385	293	274	263
50–55	265	375	318	263	367	284	510	327	310	439
55–60	180	212	126	84	162	203	203	145	86	129
60 and over ..	334	576	278	219	569	372	681	322	260	697

BLIND.

Age.	Males.					Females.				
	1931.	1921.	1911.	1901.	1891.	1931.	1921.	1911.	1901.	1891.
Total ..	*10,000*	*10,000*	*10,000*	*10,000*	*10,000*	*10,000*	*10,000*	*10,000*	*10,000*	*10,000*
0–5	239	216	301	307	407	163	198	251	239	314
5–10	441	541	551	611	641	275	370	407	440	458
10–15	480	587	668	729	582	326	377	465	517	390
15–20	471	458	596	531	561	379	357	497	431	447
20–25	493	493	619	596	666	400	463	602	521	532
25–30	499	579	640	599	567	426	460	514	498	461
30–35	506	675	638	721	673	435	591	640	681	635
35–40	610	544	551	551	508	546	406	465	474	438
40–45	638	726	807	762	756	574	720	788	784	725
45–50	681	576	591	493	469	716	526	509	452	438
50–55	702	848	867	910	730	781	989	946	966	876
55–60	878	587	509	414	421	1,077	585	513	443	464
60 and over ..	3,362	3,170	2,662	2,776	3,019	3,902	3,958	3,403	3,554	3,822

LEPER.

Age.	Males.					Females.				
	1931.	1921.	1911.	1901.	1891.	1931.	1921.	1911.	1901.	1891.
Total	*10,000*	*10,000*	*10,000*	*10,000*	*10,000*	*10,000*	*10,000*	*10,000*	*10,000*	*10,000*
0–5	26	34	19	13	49	71	77	21	57	97
5–10	119	67	79	40	89	281	159	119	83	153
10–15	239	201	207	226	232	423	434	382	431	390
15–20	548	418	393	392	420	721	615	746	642	564
20–25	733	720	580	583	640	885	865	950	788	810
25–30	1,057	860	807	781	885	1,049	882	822	869	888
30–35	1,245	1,188	1,147	1,217	1,140	1,088	1,147	1,099	1,282	1,165
35–40	1,404	1,127	1,105	1,088	1,078	1,138	786	926	907	835
40–45	1,316	1,499	1,625	1,617	1,629	1,090	1,371	1,307	1,436	1,374
45–50	1,078	1,028	1,142	1,042	1,009	972	855	867	738	707
50–55	868	1,179	1,214	1,326	1,192	840	1,115	1,126	1,199	1,169
55–60	552	573	600	561	498	593	416	485	372	499
60 and over ..	815	1,106	1,082	1,114	1,139	849	1,278	1,150	1,196	1,349

CHAPTER VIII.

OCCUPATION.

THE table with which this chapter deals is No. VIII. It was originally intended to have tables dealing with industrial occupations, but as a measure of retrenchment these were abandoned. The optional tables covering occupation by caste were dispensed with by the Madras Government. **Reference to statistics.**

2. This census saw considerable changes in the approach to the occupation question. Previously the attitude was to find out the occupation and attach to it either direct practitioners or persons dependent upon those practising. Thus the entire population was linked up to some occupation or other either directly or through dependence. At this census each person had to be classified as an earner or dependent, on the merits of his case. The change gave considerable difficulties and in particular the use of 'dependent' was unfortunate. Dependent means to the ordinary Indians who formed our supervisors and enumerators, a person who is supported by some one else. Under the actual census use this time dependent might include some person who had some occupation, i.e., means of livelihood. Much ingenuity had to be expended in solving problems and difficulties and in exhibiting these to the enumeration staff. The choice of terms is particularly important in census phraseology, at any rate under a census conducted on the present lines, where 400,000 enumerators are employed in Madras province. It is impossible to reach these directly and much has of necessity to be left to intermediate agencies. The importance of selecting terms free from dubiety is obvious. 'Occupation' itself gave rise to considerable doubts, some of them of an amusing nature. The literal Indian mind found it difficult to believe that a man who 'simply sat', as one of my supervisors put it, could be said to have an 'occupation'. In such cases I pointed to the alternative title 'means of livelihood' and by this means was able to secure an understanding of the position. I would suggest in future abandoning the use of the term 'occupation' altogether and confining ourselves to 'means of livelihood'. This phrase is directly translatable into all South Indian languages by words which convey an immediate meaning to even the ordinary man. **Changes in method.**

3. An even more marked departure was in the approach to the industrial aspect. At the last two censuses, what was in effect a separate industrial census was taken. Forms (quite distinct from the census schedules) containing a great variety of questions affecting personnel and power were sent to every employer of ten or more workmen. From these the voluminous industrial tables were compiled. This separate enquiry was given up in 1931. Strictly speaking, it contained much that was more suitable for treatment by the Industries Department and at intervals more frequent than ten years, than as an ordinary census incident. In order, however, to secure information on the important demographic circumstance of organized labour, a fresh question was put in the census schedule dealing with 'Industry in which employed'. This gave rise to constant difficulties. 'Industry' is untranslatable into the ordinary vernaculars by any word which conveys an immediate meaning to the ordinary man and the exposition of this column required very considerable care and trouble and involved altogether more discussion, questions and difficulty than any other in the schedule. It was necessary to explain when an occupation became an industry and various other recondite matters of the same type. Retrenchment considerations compelled the abandonment of tabulation of the returns under this column and the disappearance need not be regretted for it is very unlikely that the tabulated returns would have been of great value. I have been fortunate enough, however, to secure the collaboration of the Department of Industries and Mr. L. B. Green, the **Industry.**

Deputy Director, has dealt exhaustively with the province's industrial position in an appendix to this chapter. An interesting contribution from the same skilled hand deals with methods and processes of disappearing industries.

Educated unemployment enquiry.

4. An attempt was made to conduct an enquiry into educated unemployment. To this end a separate schedule was distributed and collected at enumeration time. The results were disappointing. This enquiry was not part of the normal census scheme and had not the legal backing of the enumeration schedule proper. The general attitude to it by those in Madras whom it affected was 'You do not propose to give me a job; I am not bound to answer it; why should I?'. The returns for what they are worth are printed after the subsidiary tables to this chapter.

Schedule difficulties.

5. In the margin are given the headings of the columns on which enumeration for occupation was done. Difficulty arose primarily over column (9). The heading was not very happy and as already mentioned the word 'dependent' was in fact misleading. Inevitably supervisors and enumerators tended to go astray after the ordinary English use of the word. In essence all that it meant here was 'non-earner' and by the end of the enumeration stage I had given up using the term 'dependent' altogether and did everything I could to induce others to also. Unfortunately its appearance in the official enumeration schedule rather limited the possibilities of the new idea being received, for the enumerator takes his schedule as his Bible. The best approach to the column was to confine attention to the single word 'earner'; to decide for each person, did he satisfy the definition? if he did he was called an earner, if he did not he was called the other thing, namely, a dependent.

(9)	(10)	(11)	(12)
Earner or dependent.	Principal occupation (for earners only).	Subsidiary occupation (occupation of dependents may be given).	Industry in which employed (for organized employees only).

Effectively the decision about the term 'earner' depended on the answer to the question: does the person make a regular individual contribution to the upkeep of some household? It did not require the person to be self-supporting, or actually to work with body or mind or to have a money income. The possibilities of dubiety are obvious and the number of conundrums put to me on this single point was enormous. It cannot be said that this column was a happy innovation and in future censuses it would be better to avoid such niceties and confine the enquiry to something on the following lines. (1) What is your chief source of livelihood? (2) What is your next most important source of livelihood? (3) What other sources of livelihood have you? These questions avoid altogether the use of the word 'occupation' and avoid ambiguities arising from such terms as 'earner'. The use of this last introduced obscurity into succeeding columns also. Effectively only an earner could have a principal occupation, but the terms gave some difficulty. They are not immediately clear in English and it may be imagined what translation made of them. The mere English heading to column (12) is in itself formidable and in its case translation produced the most amazing obscurities. All over, occupation enumeration at this census was difficult. At any time the occupation answers tend to be the most difficult of all in the census schedules. Men are habitually vague about their occupations. The answer 'cultivation' given so readily by witnesses in courts and in other enquiries may mean one of at least five quite distinct sources of livelihood, yet for ordinary purposes it is ample and is accepted as such. In census enumeration one of the difficulties was to induce both enumerator and enumerated to understand why what was accepted as sufficient particularity by judges, magistrates, and so on, should not satisfy the exigent census officers.

Precision attained.

6. Every effort was made to induce precision in reply and the enumeration schedules and manual devoted much space to counsel and example. In the end, as Subsidiary Table *i* shows, $5\frac{1}{2}$ per cent of the returns had to be classified

as 'insufficiently described'. Considering the ingrained partiality of enumerators and enumerated for such terms as 'cultivation', 'cooly', 'labourer', the fact that these generalities are sufficient in other enquiries, and the absence of any assistance from the special industrial census on this occasion, it may be taken as a fairly satisfactory achievement to have wrung so much precision from such unpromising original vagueness. Moreover a considerable element of this $5\frac{1}{2}$ per cent was essentially general labourers, men who take up any job offering. In their case no specific group or order can be allotted and the classification insufficiently described hardly does them justice; 'cooly' is all the name they can be given.

A further complication was the instruction that housekeeping might be entered among the occupations of dependents. This gave rise to much trouble and misconception which is reflected, as will be noticed later, in the statistics themselves. Housekeeping in certain circumstances is undoubtedly an occupation as much as bookkeeping but it was difficult to confine entries to the correct interpretation and it would be better in future censuses to separate such entries entirely from those of ordinary gainful avocations. As a result the domestic service entries at this census seem enormously swollen as compared with those for 1921 and no true comparison is possible.

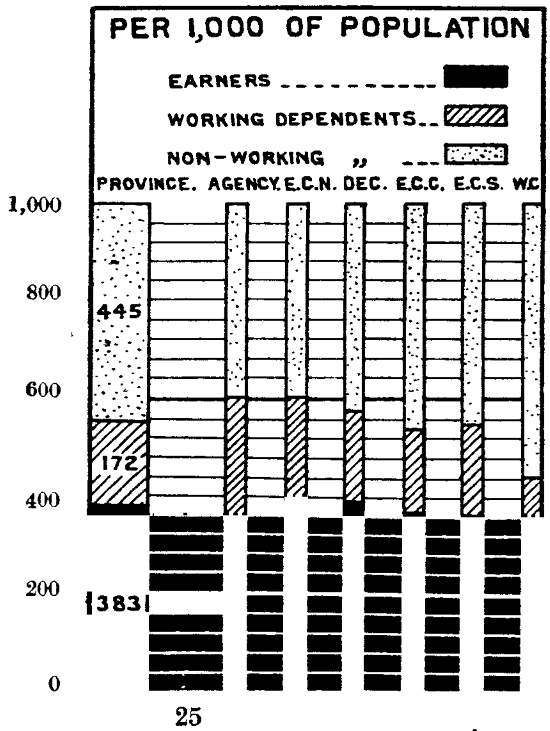
Tabulation scheme.

7. The scheme for representation of occupations follows that of previous years with certain minor modifications, some by way of addition, others by way of compression. Specific additions are made in order I, where 'Podu' cultivation now receives separate mention and a distinction is made between estate managers on Government and on private behalf. Special crops are given in more detail, tea, coffee, cinchona, rubber being now shown separately and similarly coconut, betel and ganja. Forest produce collectors are also now separated. No detail is given for sheep and goat breeders, but transport animals receive a separate head. The metallic minerals and mica are now specified. Under industry on the other hand there is some condensation of detail. An interesting expansion is in order 47—Medicine—where unregistered practitioners are now shown separately and also dentists and veterinary surgeons.

As a result of the change in approach the presentation of the actual statistics has necessarily altered. It is impossible now to reproduce the columns of 1921 which showed the numbers supported by particular occupations. This disappearance need not occasion much regret for a good deal of these must have been rather conjectural.

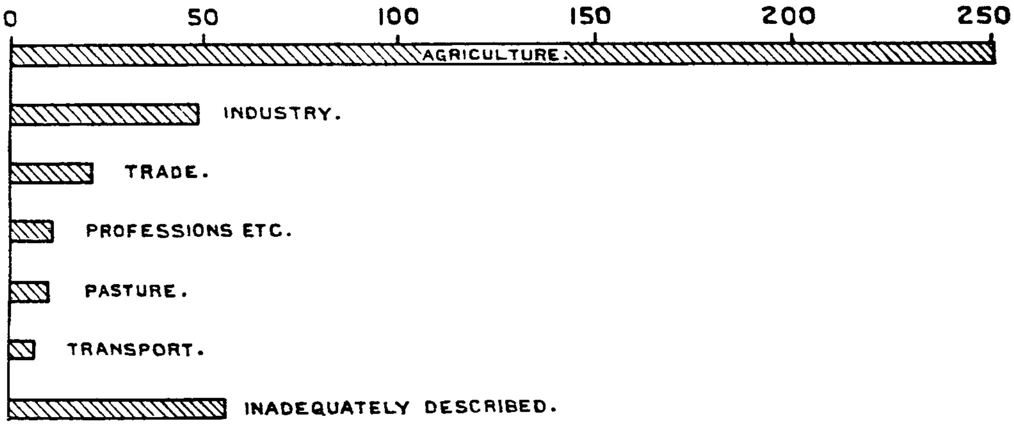
Proportion of earners, etc.

8. The diagram shows the distribution of the population between earners, working dependents and non-working dependents. For convenience the first two classes may be grouped under the head 'total employed' and the use of this term later in the chapter will always mean such a combination. 45 per cent of the population are shown as true dependents. The 1921 figure was 51 per cent. The frontier between the earner and the working dependent is not always precise as will have been gathered from the preceding discussion. A noticeable tendency is for the proportion of total employed to decrease steadily from north to south and to west. Whether this reflects a greater degree of ease in the south and west and as a result, fewer women having to contribute to the family income, is a matter of speculation, but it is not impossible that on the West Coast at least such is the case.

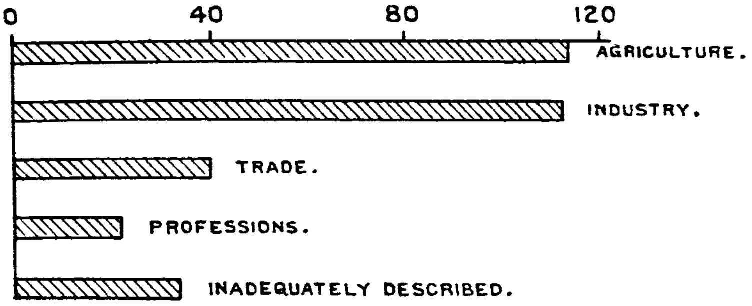


25

CHIEF OCCUPATIONS OF THOSE ACTUALLY OCCUPIED PER 1,000 TOTAL POPULATION



RELATIVE IMPORTANCE OF SUBSIDIARY OCCUPATIONS



Importance of agriculture.

9. The diagram shows the relative importance of the main occupations. Agriculture has over five times the adherents of its nearest competitor and with other forms of agriculture and pasture combined is almost equal to all the rest put together. A large proportion of those shown as insufficiently described certainly follow agricultural occupations. It would not be an excess to class half of this number accordingly and if this is done agriculture and pasture definitely exceed the sum quotas of all other occupations. The diagram and the statistics show that Madras is essentially a country which produces raw materials. As in 1921 agriculture is most important relatively in the Agency and the Deccan and least so on the West Coast ; trade and professions have there a greater relative importance. The differences, however, are not pronounced and hardly justify diagrammatic illustration.

Subsidiary occupations.

10. The diagram shows the subsidiary occupations most favoured by earners. Here industry has come up to almost equality with agriculture. This was almost inevitable ; agriculture being so predominant as a main occupation other means of livelihood were bound to figure more prominently in the subsidiary sources.

Proportion supported by agriculture.

11. In 1921, 71 per cent of the population were declared to be supported by agriculture. The subsidiary tables to this chapter show 50 per cent, or probably over it, as the total employed in agriculture and a reasonable allocation of dependents would for those supported by this occupation produce a figure differing not greatly from the 71 per cent of 1921.

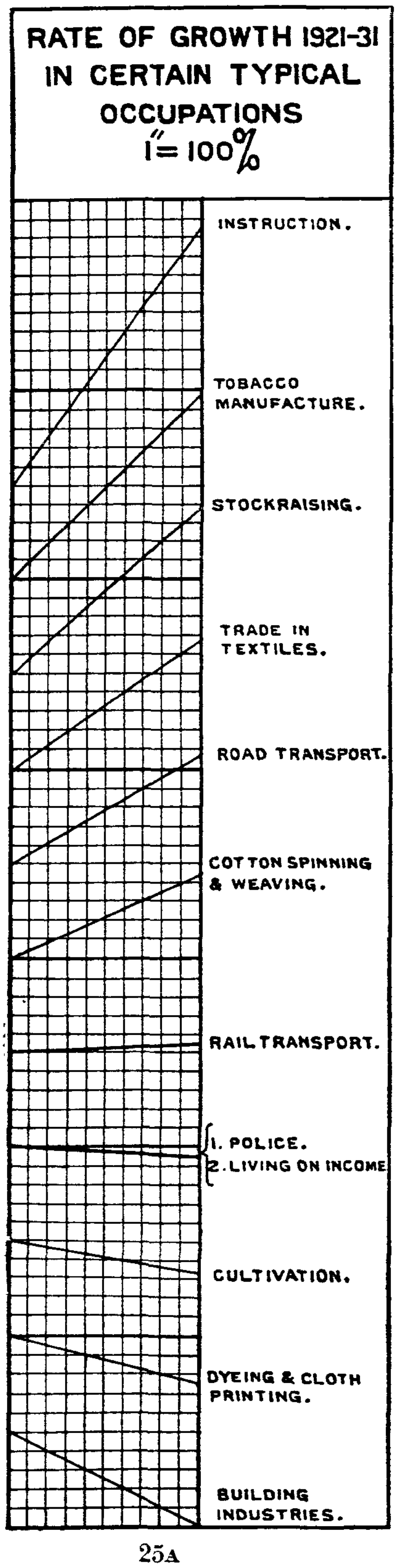
Numbers employed.

12. Subsidiary Table *iii* compares the numbers employed in the various occupations in 1921 and 1931. The change in the approach may to some extent have affected allocation of workers to the various columns in the two censuses. Taking, however, earners and working dependents to be equivalent to the ' actual workers ' of 1921, the number of employed has gone up by nearly 6 millions. Much or most of this however is accounted for by the swollen figures of domestic service already mentioned. It is not possible to allow precisely for the effects of this but its effect probably runs over 5 millions. Making some such deductions the 1931 total becomes little above that of 1921 and

workers would appear to have increased much less than the 10 per cent by which the total population grew. This increase of population being mostly at the lower end of the life scale such a difference was to be expected.

Particular injunction was given to determine as far as possible the chief means of livelihood, in the sense of that which contributed most to the upkeep of the individual. Agriculture, whatever the return for it, remains the chief of all occupations for an agricultural populace. Supervisors and enumerators were told, however, to put the issue plainly and to enjoin upon the enumerated that sources of livelihood, where more than one existed, must be put in the order of the actual returns they yielded. It is almost certainly a consequence of this particularity that the employed under cultivation show a considerable decrease at this census from 1921 while the numbers under stock-raising and other specific heads in sub-class I have increased enormously.

Rates of growth compared. 13. The diagram illustrates the differing rates of growth among occupations. The steepness of the road transport line should be compared with the almost level rail transport. Instruction's upward thrust contrasts vividly with police's downward inclination. Stock-raising with cultivation, textile manufacture and trade with dyeing and printing form other contrasting pairs.



Agriculture. On studying Subsidiary Table *iii* one is first struck by the large decline in the actual number concerned in the production of raw material. A diminution of 11 per cent in this important branch, which as already shown contributes about half of the total employed in the presidency, occasions some surprise. The only two heads under cultivation proper which have increased are agricultural labourers and estate agents, clerks, etc. Non-cultivating owners and tenants show the most marked reduction and all over, the actually employed under cultivation proper show a diminution of 14½ per cent. On the other hand, all the specialised branches of agriculture and pasture show a marked increase. Those employed in raising special crops are up 30 per cent. The raising of coconut, etc., is up nearly 50 per cent and forestry occupations 25 per cent. The most marked rise is in stock-raising where the employed are 225,000 more than in 1921 representing an increase of 89 per cent. Fishing and hunting show 50,000 more than in 1921. It seems clear that the great diminution in agriculture is due largely to a greater precision in recording of sources of livelihood which has led to persons classified under 'cultivation' in 1921 now coming under stock-raising, fishing, grazing of small animals, etc. It was observed in 1921 that agriculturists showed a great rise over the previous census, by 20 per cent. Comment was made then that some of it probably represented the habit of classing one's occupation as agriculture in preference to other specific but less honourable pursuits. The large reduction this time may therefore reasonably be attributed at least in part to return to a more accurate description.

Minerals. Sub-class II—Exploitation of minerals—covers a comparatively small section of the population. It shows an enormous increase of over 300 per cent. Most of this is due to

increase under non-metallic minerals and almost certainly the bulk of this relates to mica though 1921 figures for mica are not available on which to base a precise comparison. Nearly 26,000 persons are now employed in the extraction of materials covered by groups 37 to 39.

14. Class B covers the many operations coming within the heading 'preparation and supply of material substances' and is the chief contributor to the gainfully employed after those concerned in agriculture or allied operations.

Industry. Sub-class III covers industry, the numbers employed here having increased by 3 per cent, the chief contributor being textiles, which have now 70,000 more associated persons representing a 13 per cent increase. Among textiles the chief contributor to the increase is cotton spinning and weaving; under this head 140,000 more direct workeis are employed than in 1921, an increase of 44 per cent. Cotton ginning is also up enormously, though the numbers concerned are smaller, and the employed under all fibres have also gone up. On the other hand dyeing, printing, etc., are down by 25 per cent and lace embroideries, etc., have practically vanished. The disappearance of the last named element is probably due to the fact that in 1923 it covered 'Insufficiently described textile industries'. Since the quota then was 113,000 odd and lace industries could not possibly contribute anything more than a small fraction of this, the share of the insufficiently described must have been very large. It is a fact that lace industries have declined much, mainly owing to the great contraction of markets; nevertheless far the greater proportion of the drop of 110,000 employed is due to greater precision in giving occupations. Some of the great increase under cotton and other textiles probably represents also this increase in precision rather than a positive accession to these employments, but the increase remains impressive. The decline in printing and dyeing is an almost inevitable incident of the spread of factory-made textiles.

Artificial silk. An interesting development of the decade is in the favour accorded to artificial silk. This is frequently confused with mercerised cotton fabrics but there is much import of artificial silk in the true sense. Handloom weavers have taken to it and many looms in Salem, Coimbatore, Madura and Ramnad and all the Tamil districts are devoted to this branch of weaving. It is frequently woven with cotton as weft and a fair amount is exported. Estate coolies are frequent purchasers. Weavers from towns with a reputation for work in real silk have so far fought shy of working in the artificial fabric; they fear it would spoil the reputation of their older product.

Persons concerned with hides and leather generally have increased 35 per cent in numbers and a similar increase applies to order 7—persons working in wood. The rise is most marked in basketmakers, whose numbers have gone up 60 per cent representing an increase of 50,000. Here too are probably found many persons who in 1921 appeared under that catholic term 'Agriculture'. There seems no immediate reason why basketmakers should have in themselves increased so considerably. Workers in all metals have gone up on an average 30 per cent. Ceramics and potters are up considerably but brick and tile makers on the other hand have decreased. This probably represents the effects of the slump on the organized tile industry of the West Coast. Chemical products have risen considerably in the number of their employed, the chief contributors being those dealing with vegetable oils whose numbers show an increase of over 100 per cent. This has a bearing on the great extension in cultivation of groundnut during the decade. Not all the groundnut grown was exported, though the great bulk of it was, and the much greater attention paid to the growing of oilseeds was bound to have some reflection in the numbers of those concerned in dealing with the seeds produced.

Food industries show a drop of 5 per cent; tobacco figures however have doubled, an indication of the growth of the smoking habit, which is a matter of ordinary observation. Rice pounders and sugar-makers are down but sweetmeat makers have gone up threefold. A peculiar difference obtains in the constituents of order 12—Industries of the toilet. Boot and sandal makers have diminished but tailors have increased 70 per cent and dhobis 10 per cent. Barbers also have increased considerably. The dhobis' rise represents an

accession of 30,000 employed. One may perhaps in these differences see an indication of changes in habits. It may be that a greater addiction to manufactured footwear is responsible for the decline in shoe and sandal makers. The large increase in barbers possibly reflects greater prevalence of the hair-cropping fashion. In all these heads however it is likely that some contribution represents persons lumped under agriculture in 1921.

Furniture industries, a small head, has gone up but the succeeding order 14, which covers building industries, shows a large decline of 50 per cent or 150,000 workers. This almost certainly reflects the decline in employment existing at census time and the comparative cessation of house-building or new construction.

Transport. All occupations concerned with transport have gone up markedly. Any other result would have been surprising in view of the great extension of road transport during the decade. The construction of means of transport is up by 75 per cent and a reflection of tendencies is shown in the components, a 500 per cent increase in persons concerned with making or repairing motor vehicles or cycles, and a 40 per cent decrease in the numbers employed on carriages, carts and similar vehicles. The numbers employed in the actual transport, as distinct from manufacture and repair of the means of transport, show a parallel increase of 56 per cent or 60,000 employed. Persons employed on roads and bridges have increased almost sixfold. This is an indication of the great development of road communications in the presidency and the expenditure upon them. The numbers employed in mechanically-driven vehicles have gone up sevenfold in the decade, their numbers being 14,500 as against 2,000 odd ten years ago. Persons engaged in water transport have also gone up considerably, the rise being 55 per cent. The great rise in persons concerned with mechanically-driven vehicles is the most striking feature of this class, but the chief component remains persons concerned with other vehicles, whose contribution is 150,000 if subsidiary workers are included. In this group too there undoubtedly enters a considerable proportion returned under cultivation in 1921.

An indication of developments in the decade is shown by the increase of group 94, heat, light, electricity, etc. The numbers are still small but are more than thrice their 1921 figures. It is likely that ten years hence an even greater increase will be shown.

The number of persons employed in Railways and Posts and Telegraphs shows an increase, but nothing abnormal, a close reflection of the little variation which obtains in these branches of employment.

Trade. 15. The numbers employed in trade show a decrease in actual workers with considerable variation among the components. Persons engaged in the production of textiles show an increase, so does the number of persons trading in these groups, the increase being 66 per cent. A similar parallelism between manufacture and trade is shown in the commerce under dyes and tiles, both of which record a decrease, while wood trade is up 25 per cent. Order 31 shows an interesting difference between its two components. Liquor-sellers are up very slightly while persons employed in restaurants and similar places have gone up 60 per cent. The number of liquor-sellers is practically fixed by law, while anyone can open a hotel or cookshop. The growth of the coffee and tea habit is reflected in the increase in the latter figure. The trade in other foodstuffs—order 32—shows curious variations. On the whole the decrease is 9 per cent. Sweetmeat sellers show an enormous decrease but a little further down an equally enormous increase is shown in dealers in other foodstuffs ; clearly a difference in classification is at work here. Over the two heads 1931 is definitely greater. Tobacco-sellers show a marked increase, again parallel to an increase in manufacturers. They are grouped along with dealers in opium and ganja, but the increase can safely be attributed to them, for like liquor-sellers, the numbers of those who retail opium and ganja are both small and practically fixed.

Order 33 shows a marked decline, 30,000, in ready-made clothing sellers. Against this should be placed the great increase in tailors. To a large extent the two clearly cover the same ground. Further parallels between employees

engaged in preparation and those engaged in trade are given in the decrease of traders in furniture and building materials and the increase in those selling hardware and means of transport. An increase in fuel traders is to be expected with an increase in population and the rates are curiously close, 11 per cent to 10·4.

Order 39—Other trade—shows a decrese of 33 per cent. This decrease is accounted for wholly by the fall in the number of 'unspecified shopkeepers' to the extent of 100,000. Here the good work of the enumerators is most clearly shown; every trader was pushed to his actual articles of commerce and not left at merely 'trade'.

Administration, etc.

16. Numbers under Class C—Public Administration and Liberal Arts have increased 28·5 per cent but one important component shows a decrease, viz., Public Force. Of this, order 43—Police contributes nine-tenths. Uniformed police are down by 1,620 or 5 per cent. That a 10 per cent growth in population should be accompanied by a 5 per cent fall in the numbers of its uniformed guardians of the peace is greatly to the presidency's credit.

Some might see an undesirable growth in bureaucracy in the 50 per cent increase in the servants of the State. Persons concerned in the professions show a rise of 9,000 and 40 per cent. Nearly all of this is due to the increase in the teaching profession; the numbers of teachers have gone up 65,000 or 35 per cent. The extension of elementary education has been a feature of the decade and its reflection in the numbers of teachers was inevitable. An interesting increase is the threefold rise of priests and ministers. To some extent no doubt the reduction of persons described as servants in burying grounds and so on has contributed, but their decrease is only 15,000 against 27,000 rise in priests. Probably here too many holders of purohit inams and so on have given their priestly occupation as their main source of income in preference to agriculture. Under medicine no details exist for 1921 for unregistered practitioners, so no comparison is possible. It is certain, however, that the increase of 38 per cent is mostly due to the appearance of 35,000 persons practising the healing arts without being registered.

Miscellaneous.

17. Class D shows an enormous increase but this represents the domestic service confusion already referred to. Omitting this item, other details show a rise; private chauffeurs have gone up fourfold, once again a feature to be expected. The heading 'Insufficiently described occupations' shows a large rise. This is not however so vague as appears. As pointed out already a large element of the labouring population is in fact essentially casual labour not permanently indentified with any specialised activity. Probably many who gave the return 'Cultivation' in 1921 have described themselves as casual labourers in 1931; here probably again is a reflection of the greater stress laid on detail, for enumerators were told to return under 'Casual labourer' any persons who took what work was offered to them whether agriculture or otherwise and were not clearly or predominantly associated with any specific branch.

Jail and asylum inmates have gone up by 40 per cent in the decade and beggars and vagrants show a rise of 25 per cent and 30,000. Many of the enumeration staff had some difficulty in understanding how any beggar could be an earner; clearly, of course, in the use of the term they could be, and this point was ultimately well appreciated. As a result, probably a good many persons who otherwise would have been shown as dependents in the ordinary sense were classed as earners with begging as their occupation.

Relative importance of branches of agriculture.

18. The small table in the margin gives the chief contributors to 1,000 persons engaged in cultivation. The predominance of agricultural labourers is at once apparent and these with the working owner constitute over 80 per cent of the total persons engaged in agriculture. The proportions have varied considerably from 1921 but considerations already adduced will account for most of the variations. Circumstances of pride frequently enter in these returns of occupation. The low

Agricultural labourers	429
Cultivating owners	390
Cultivating tenants	120
Non-cultivating owners	34
Non-cultivating tenants	16

proportion of the non-cultivating tenants shows to what extent sub-infeudation obtains in Madras and from another point of view indicates the extreme smallness of the average holding.

Of industry,

19. In the margin are given the chief items per 1,000 persons engaged under sub-class III—Industry. Much the largest contributor to the dress and toilet item represents dhobis. Almost half of the high proportion represented by wood industries refers to basketmakers and persons working in leaves, thatches, bamboos and so on. The chief constituents of ceramics are the potters and makers of earthenware. Toddy drawers contribute nearly half of the total employed in food industries, rice pounders and manufacturers of tobacco following a long distance behind. In road transport the persons concerned with non-mechanical vehicles contribute over half and labourers on roads and bridges a third.

Dress and toilet ..	257	Building	61
Wood	127	Ceramics	50
Road transport ..	110	Metals	37
Food industries ..	103	Rail transport ..	23

Of textiles,

The relative importance of the various branches of the textile industry is indicated by the figures in the margin taken to the base of cotton=100. Cotton contributes more than twelve times its nearest rival. The rope class represents almost entirely the coir industry which flourishes on the West Coast. Clearly Madras as a textile area spells simply cotton.

Cotton	100	Wool	3
Rope, twine, etc...	7	Jute	1
Silk	3		

Of trade,

20. In the margin are given the contributions of the various elements to 1,000 persons returned under trade. The ubiquity of the small shopkeeper is a fact of common observation in Madras. It was noticed in another chapter that the bulk of the residents in the Seychelles favoured this form of activity. Applicants for advances from charitable funds often give as the object of the advance the starting of a small shop. In a country of villages small general shops must of necessity be numerous ; the high proportion therefore need cause no surprise. In a country whose chief diet is rice and millets grain sellers are bound to figure prominently among traders. One might however have expected their quota to be larger. The majority of the small shopkeepers do a certain trade also in grain and probably some of them might more accurately have been classed under grain sellers. The other components call for little comment except that the number of hotelkeepers has increased greatly from 1921. The decade has seen great advances in road transport and a much greater addiction to movement produced thereby. When movement increases the need for refreshment is also more felt and the number of cookshops and similar places may be expected to increase. This has in fact happened.

Small general shopkeepers	195
Grain sellers	72
Textiles	71
Sweetmeats, spices, etc.	56
Fuel	50
Bankers, moneylenders, etc.	50
Hotels, cookshops	44
Dairy products	29
Wood	17
Skins, etc.	13

Of professions, etc.

21. The chief constituents of those employed in professions and liberal arts, sub-class VIII, are shown in the table in the margin. The first three heads have increased very largely since 1921, the first one having more than doubled. The decade has seen the opening of very many schools, mostly elementary, and expenditure of much greater sums on education. The great increase in the teaching profession follows from this.

Instruction	342
Religion	291
Medicine	154
Musicians	104
Law	52

District distribution.

22. Subsidiary Table *ii*-a shows the broad distribution of activity in the various districts. The proportions under sub-class I greatly exceed those of every other class, except naturally in Madras city. They are, however, notably smaller in the south and west than in the north ; the district returning the highest quota under this class is Anantapur, and in general the Deccan returns the highest figures. This is not surprising, for the Deccan is one of the less developed areas of the presidency. Exploitation of minerals is practically

nil throughout. Figures with the decimal point have been retained in order to show such difference as exists. The only areas to show an appreciable figure under this head are Nellore and the two Indian States. Sandur's contribution represents manganese, Nellore's mica, Salem's magnesite chiefly. In sub-class III—Industry the district figures run more on a level than might have been expected. It is to be remembered here that industry does not bear the implication of organized employment attached to it so often but simply those activities coming under sub-class III of the occupation classification system. The majority of such occupations must of necessity be found in every district. Examples are woodworkers, blacksmiths, refining vegetable oils, potters, tailors, dhobis, transport workers and so on. Hence the comparative absence of wide difference. The highest figure is returned naturally from Madras, closely followed surprisingly enough, by Vizagapatam plains. Coimbatore, Tinnevelly and Guntur return higher figures than most. In their case industrial development in the modern sense has gone further than in other districts. In Guntur's case it represents mostly tobacco, and cotton principally in the other two. The proportions in transport ought again not to vary markedly from district to district, except possibly in the less developed areas such as the Agencies. Such in fact is the case. Only Madras city shows a rate markedly above the others and conditions in it are not those of the normal district. Kistna's high figure is an indication at once of its comparative congestion and of the numbers of persons engaged on its navigable canals. Trichinopoly is the headquarters of the South Indian Railway and of necessity has a disproportionate number of railway workers within it. The Nilgiris' high figure is an indication of the large dependence of this district upon road transport.

Trade shows comparatively little variation, Madras city again being much above the other districts. Wide variation need not be expected but the more densely populated areas might be expected to show a larger proportion under trade. This to some extent is borne out; Malabar, Tanjore, Godavari, all return figures higher than the others.

Under public force the district contributions again vary little. Madras city requires a much greater element than the normal districts. Its figure for example is over five times that of Vizagapatam plains which has nearly four times its population. Banganapalle and Sandur both return figures above those from the normal districts. These small States have to keep up an independent force above that which would be required were they pieces of a large district area. The greater expensiveness of small units is indicated by this fact. Salem's low figure is creditable in view of its large area and population. The Nilgiris seem to have an undue proportion of public force, but this is explained by the presence within it of the chief cantonment of the presidency, Wellington.

Column 11 of the table shows Madras city to contain the largest quota of administrators, a natural result of its being the province's headquarters. Of the ordinary districts Tanjore seems to require most officials and Nellore least. Tanjore's population is of course dense but not so dense as that of Godavari East plains whose figure is only 3/5 of the Tanjore one. The two small States again show higher figures than the ordinary district in this regard, Banganapalle's 4·6 being notable.

Malabar leads among the ordinary districts in its proportion of persons following professions and liberal arts with Tanjore following closely. These are well ahead of the next districts, the Nilgiris and Kistna. The lowest proportions, apart from the Agencies, come from not the north as might have been expected, but Chittoor and Salem. This indicates the comparative backwardness of these two districts illustrated here as in other ways. The figures under domestic service have been, as already mentioned, considerably affected by the misuse of the housekeeping entry in the schedules. The proportions are comparatively consistent in the column, the only marked divergences being the low figure for Malabar and the high figure for Chittoor.

The proportion of insufficiently described occupations is greatest in Malabar and the Nilgiris, a remarkable circumstance when one remembers that these are among the more advanced regions of the presidency. Both however contain

a large element of essentially casual labour. To Nellore on the other hand, one of the less advanced districts, falls the honour of the lowest return under this head and its 7·3 is greatly to the credit of its census workers. Its neighbours have also creditably low figures. Godavari West, Guntur and Kistna all return proportions below 20 per 1,000. On the west only one of the Ceded Districts goes above 25 per 1,000. This records the careful and painstaking enumeration which I discovered in my district rounds. The Ceded districts man may not be bright but when he is once seized of a fact he is steady and reliable in applying it.

Unproductive occupations reached their highest quota in Vizagapatam plains, closely followed by Bellary. Madras city is not far behind. The lowest proportions here come from the West Coast, the Nilgiris, South Kanara and Malabar being in close rivalry for the last place.

District importance in various occupations.

23. Differences in the district importance of various occupations are occasionally of interest. The non-cultivating proprietor for example seems a more prominent feature of agriculture in Guntur than in any other district. Only East Godavari of its Circars neighbours approaches its figure, but even it is beaten for second place by Kurnool which in this respect differs widely from the rest of the Deccan. Other districts where the proportion is higher are Tanjore and Malabar. It is lowest in Salem, Trichinopoly, Madura and Chittoor and on the whole runs higher in the Circars than elsewhere. Cultivating owners are strongest in North Arcot, Salem, Ramnad and Chittoor. Here too Guntur shows higher figures than its neighbours. For tenant cultivators, Vizagapatam and Malabar have an overwhelming lead. The first is almost entirely zamindari and the second a region of janmi ownership. Guntur is here behind its adjoining districts, the natural result of a smaller quota of rent-taking landlords and a larger of cultivating owners. The proportion runs lowest in the Ceded Districts. South Kanara has a peculiar prominence in its quota of non-cultivating tenants. Apparently sub-infeudation is more possible or more practised there.

Jhum or taungya cultivation, better known in this presidency as 'podu' is as the tables show, essentially a Circars—and there an Agency—feature. It is at once an agricultural, a forest and a social problem and the last aspect is not the least important or difficult, for if Konds and other hill tribes are to stop podu they must find some other way of raising the crops on which they live; such a change would be almost a mental revolution for them.

The tables indicate the regions where the various special crops flourish. The West Coast is shown as the home of the coconut and this palm is in the true subsistence of a large part of the population of that crowded region. Coffee, tea, rubber and cinchona all favour the South-west and West. The pan-vine is more widely distributed but also favours the south with Tanjore as the district of its predilection. A recent extension of European planting has been in the Elagiri Hills of North Arcot where fruit is being grown.

The unusually high quota of woodcutters in Vizagapatam plains, not one of the most generously forested districts, is rather surprising. The delta districts and Nellore and Chittoor seem to be most given to cattle raising while Ganjam, Vizagapatam and Guntur have an easy lead where other animals (mostly goats) are concerned. Fishing is naturally predominantly a matter of coastal areas and the numbers returning the occupation are in rough proportion to the length of coastline. Cotton ginning, etc., is most prominent in Madura with Vizagapatam as a rather surprising second. Tinnevelly as third is a natural position but Ganjam as fourth again occasions some surprise. Salem returns the highest number of actual spinners and weavers of cotton and its headquarters town has a similar lead among the cities. Coimbatore is a good second with Vizagapatam third. The returns under this class do not of course refer all or mostly to factory workers but cover the individual workers who are found throughout the presidency. Jute operations are a feature of the Kistna delta. Group 45, rope, twine, etc., spells in effect Malabar and coir. Silk weaving, etc., favours the Tamil districts but shuns the west. So do activities concerned with leather. Malabar supplies half the sawyers and about an

eighth of the carpenters, a sufficient indication of where the presidency's chief timber lies. Potters are widely distributed but the West Coast yields nearly 50 per cent of the brick and tile makers.

The three most northerly districts give more than a third of the males and half the females employed in manufacture, etc., of vegetable oils. This reflects the importance of oilseeds in Circars agricultural economy. Rice-pounders are notably fewer in the Deccan, a millet-eating area, and correspondingly numerous in the Circars, particularly Ganjam. Pre-eminence in sweetmeat making is peculiarly distributed between Malabar and Guntur while Malabar leads easily also in sugar, etc., makers. Tobacco makers are well distributed, like the smoking habit and the almost universal beedi, but while higher figures might be expected from Madras and Trichinopoly, it is Vizagapatam which leads while Ganjam is also well up. Makers of shoes, etc. (order 12), seem notably fewer on the West Coast, and Guntur and Nellore lead easily in this, which seems rather to prefer the north. Ganjam and Vizagapatam between them appear to produce half the professional washerpeople of the presidency and the West Coast quite markedly the least. One hesitates to attribute this to a greater passion for cleanly attire ; it is more likely that the more leisurely habits of that region make washing a whole-time occupation, while in the south and west it is more often associated with other activities. Vizagapatam plains and Coimbatore people seem to pay most attention to their hair, for their allotment of over three barbers per 1,000 is above that of other districts. The Agencies on the same reasoning should be much the shaggiest. The number of professional scavengers diminishes markedly from south to north.

Transport by water is, as might be expected, a feature of the Telugu deltas and their 900 miles of navigable canals, the West Coast with its lagoons and backwaters, and Madras City, the nodal point of the odoriferous Buckingham Canal. These furnish about six-sevenths of the total employed. Apart from Madras City, the West Coast and Coimbatore lead in the number of persons connected with mechanical road transport. Ganjam is last, followed by its neighbour Vizagapatam and Ramnad. The driving of other vehicles as a subsidiary occupation is on the other hand returned in greatest numbers from Ganjam, and strongly also from Vizagapatam. Here we have the agriculturist putting his bandy to profitable use in the off season. North Arcot has a pronounced lead in trade in skins, leather, etc., and its neighbours Salem and Coimbatore follow it. The weakest regions for this commerce are Vizagapatam and the West Coast. In the trade in timber as in its extraction, Malabar has a pronounced lead, as also in bamboos, though here East Godavari and Nellore are fairly close rivals. It has a pronounced lead in rather a different line of commerce, which reflects a capacity in which the Malayali's skill is well known far beyond his native coast : Malabar has three cookshop people per 1,000 of population, a figure approached only by the city conditions of the presidency town. Madura comes next, but far behind. This recalls an incident in my census touring when I came upon a newly opened Malayali coffee shop in a Muslim township in North Arcot. 'Why is it these men, and not some of your own people who open these shops ? ' I asked. 'They are better cooks ' was the reply. A similar though not so marked pre-eminence attends the general head 'other trade in foodstuffs '. South Kanara seems more addicted to sweetmeats than other districts. Malabar seems to be most given to smoking if the proportion of tobacco dealers is any guide. East Godavari plains follows, a district in which one may see, as in Holland, not only canals but (though not so frequently) small boys smoking fat cheroots on their banks. Ganjam and Vizagapatam return between them half the fuel sellers of the presidency both as a first and as a subsidiary occupation. The predominance seems exaggerated but probably fuel-selling, especially of cowdung, is relatively more important in these parts.

Malabar shows many more small shopkeepers than other district, about 10 per 1,000 of population. To some extent the wide dispersion of houses and the absence of formed villages must lead to a greater number of small general shops but there is possibly something also of predilection at work.

Tanjore and Ganjam plains are far ahead of the other districts in the priestly avocations returned. Cuddapah is last. One need not however draw any inferences on respective piety from the differences. Malabar's predominance in group 166, religious servants, probably indicates the presence of a strong contingent of circumcisers. Lawyers are lowest in Kurnool and petition writers seem most prevalent in Malabar. Tanjore has most registered physicians, who are in general more numerous in the Tamil districts except North Arcot. This district with Chittoor and the Deccan are the least doctored in this sense. Malabar and the north, on the other hand, seem to be the favourite resorts of the unregistered practitioner. In fitting company with its high place in literacy, Malabar leads in its quota of teachers. Tanjore follows, also a district among the most literate. Ganjam and the Deccan return the lowest quotas. It is odd that it should apparently require less assistance in the way of clerks, etc., for Malabar's 15,000 teachers than for Cuddapah's 2,000 and indeed its actual number, not only quota, is among the lowest under this head. Some vagaries in nomenclature must be present here. The south of the presidency is significantly strongest in astrologers and the like.

'Living on their income' has always seemed a peculiarly inapt description of a specific means of livelihood, for unless a person lives on someone else it is difficult to see how he can do other than live on his income. The term should be altered or receive the addition 'without specific occupation' or some other explanatory phrase. It is however fairly well understood and caused no particular difficulty in application. Some of the vernacular equivalents are distinctly amusing; nearly all contain a reference to sitting, which clearly plays a large part in the daily life of these fortunate persons. Madras City and then, a long way behind, East Godavari and North Arcot, are most prolific of the species, with Tanjore also well up. Ganjam's low figure should not however be taken to imply a greater general activity in this district than in those or in others.

If private chauffeurs are an indication of prosperity, Madras City, Madura, Ramnad and Tinnevelly would seem most prosperous and Cuddapah least.

The Circars lead easily in beggars and vagrants, and prostitutes on the whole prefer the south, where the urban proportion is larger.

Beedi making.

24. Elsewhere a great increase in the number of persons engaged in the manufacture and sale of tobacco has been noticed. This spells mainly the popularity of the beedi. A general growth in the smoking habit has been noticeable to ordinary observation during the decade. The application of a tariff and the setting up of tobacco manufacture in or adjoining the presidency (Bangalore is a notable centre) led to considerable encouragement of cigarette smoking. At the end of the decade came the boycott of imported cigarettes and the beedi came into its own. This is in essence a small quantity of powdered tobacco rolled in a special kind of leaf (usually imported from Bombay). Much beedi making is done as a house industry, notably by Muslim women. It is among Muslims that beedi smoking seems to be most common, a fact borne out by the prominence of tobacco dealers in Malabar and North Arcot. Beedis are actually exported from Madras to Burma and the Malay States. There is great variety in size in the manufacturing units; it depends chiefly on the premises available. Where a godown or shed is used the employees may run up to 150 or 200; where a house is used 50 would be a maximum and 30 an average. There is a good deal of employment of children and long hours. Parents take a small advance from the employer of their children and so are little disposed to protest unduly or to withdraw them. The lighting and sanitary arrangements of the establishments are far from good, or are almost nil. Payment is by outturn, generally about 12 annas a thousand. The ordinary workman's performance would be about 100 an hour. Children are usually paid by the week, payment varying with capacity and age. The Factory Act does not apply to these places because no power is used. If section 2 were extended to them, it could be defeated by keeping the numbers below ten. A tendency towards smaller units seems already apparent. North Arcot is one of the strongholds of beedi making, with 74 factories and 1,200 workers, half of whom were children. These factories are essentially fluctuating in

nature. They can be set up, closed or transferred with equal ease. It is certain that a good deal of this form of employment has not entered the census returns. So long as beedi making is kept a house industry there is probably little to be said against it and it forms a useful subsidiary occupation, especially for Muhammadan women who do not ordinarily go abroad. Its tendency will probably be towards some such scope; it is unlikely that large-scale quasi-factory operations can be of long standing.

Female workers.

25. The number of female workers shows a considerable increase relative to the male, the figures being 896 per 1,000 as against 585 for 1921. This rise again is the result of the increase in numbers under Domestic Service caused by the introduction of housekeeping as a census entry. If for females under Domestic Service we allow only a number bearing the same increase ratio over 1921 as applies for males, the proportion of female employed sinks to 451, well below the 1921 figure and thus a tendency towards decrease noted by Mr. Boag in 1921 seems to be continuing. Apart from this disturbing item, the proportion of women following the various avocations is generally less than in 1921.

In the margin are given the occupations (other than group 194) which engage more women than men, with corresponding figures for 1921.

	Females per 1,000 males. 1931.	1921.
1. Agricultural labourers	1,015	996
2. Raising of silkworms	2,108	987
3. Rope, twine, etc.	6,000	4,428
4. Lace, embroideries, etc. ..	2,583	452
5. Basketmakers, etc.	1,225	1,106
6. Rice-pounders, etc.	3,105	2,986
7. Grain-parchers	2,803	500
8. Sugar, etc., makers	1,228	901
9. Embroiderers, hatmakers, etc.	1,044	1,403
10. Dealers in dairy products ..	1,627	1,138
11. Dealers in fodder	1,620	1,255
12. Dealers in fuel, cowdung, etc. ..	1,389	1,028
13. Dealers in rags, etc.	1,099	207
14. Vaccinators, Midwives, Masseurs, etc.	2,012	1.382
15. Unspecified workers	1,053	1,133

The figures omit subsidiary occupations in order to secure as close comparison with 1921 as possible, but for a complete view all persons engaged should perhaps be considered. In every case but three the occupations in which women are now in a majority showed a very large female element in 1921 also and in nine of the fifteen women were in excess also in 1921. The exceptions are of some illustrative interest. The 1931 figure for persons engaged in lace and embroideries is undoubtedly the truer of the two for the removal of the previous large number of ' unspecified textile workers ' has brought the facts of this particular branch to light. The change in grain-parchers is less immediately explicable, but here too the higher sex ratio is the more probable. The most pronounced change is in traders in rags, etc., but here the total number of females in 1921 being 67 and males 323, ratios per 1,000 males have little meaning. Even the 1931 total figure is below 800.

26. Groups for which the sex ratio was above unity in 1921 and is now below, number five. Two are of the ' others ' type in which total numbers are small and which fluctuations are always possible owing to greater or less precision in naming or classing occupations. One is exploitation of mica and other materials which has enormously increased since 1921 and in which a male surplus seems prima facie more likely. The fourth is group 75, sweetmeat and condiment-makers. Its neighbour and close connection 74, makers of sugar, molasses, etc., has gone from minus to plus and clearly a variation in classification is at work. The last is trade in pottery.

27. If subsidiary workers are included, the ratio in items 1, 2, 9 and 15 of the list in paragraph 25 would change from above to below and for 13 would become par. For 4, 6 and 14 it would increase further and for the others would diminish in varying degrees, but would remain above unity. In none of the five cases mentioned in paragraph 26 would inclusion of the subsidiary workers make any appreciable difference.

The occupations in which the numerical superiority of women workers remains pronounced are all associated by ordinary experience with female activity. The share of women in treatment of West Coast coir, in rice-pounding and grain-parching, in collecting fuel and fodder, for example, are incidents of common observation.

The only occupations of importance to show an increased proportion of female workers, apart from those mentioned already, are fishing, dyeing, etc., potters, tobacco-makers, labourers on roads and bridges, municipal service, religious servants, and beggars and vagrants. In all, the proportion diminishes if subsidiary workers are included. All are occupations in which a female element can obviously be considerable with the possible exception of the first, where the female share is more likely to be in the way of net repairing and treatment of the catches than of actual fishing. The actual proportion is generally below 5 in 10.

28. Some general statistics for cities will be found in the table which forms Appendix II to this report. Cocanada shows the lowest proportion of persons connected with agriculture ; Tuticorin follows, then Madras, then Bezwada. Then oddly enough comes Salem. The low percentage in its case reflects the large element of weavers in its population. The highest figure easily is returned by Vizagapatam with over a third of its workers connected with agriculture. Other high figures are returned by Tinnevelly, Kumbakonam, Guntur, Conjeeveram, Palamcottah. In all these places there is a considerable residential landlord element, though one had not expected it to be so large in Vizagapatam. The highest industry proportions come again with something of a surprise, for the first places are occupied by Conjeeveram and Salem. This reflects the presence of a long-standing weaving industry. The same applies to Palamcottah. Madura's cotton spinning is well known. Ellore has long been occupied with jute and carpets. Madras city is comparatively low in this column. Vizagapatam and Calicut are at the bottom. Vizagapatam's place occasions no surprise, as its industrial element is very small, but one would have expected Calicut to return a figure above 140 per thousand. Rajahmundry leads in the proportion occupied in trade. Vellore follows, then Trichinopoly, Calicut and Rajahmundry. Both Rajahmundry and Vellore are long-standing trade centres. Their position must have led always to a certain amount of concentration and therefore of trade. **Cities.**

The first place for the professional quota occasions no surprise, for Tanjore has long been a centre of the arts and professions. Rajahmundry and Masulipatam follow. Salem is last with 12 closely followed by Conjeeveram with 13 per thousand.

Rajahmundry returns the largest proportion of earners among its males, nearly three-fourths of them being shown under this head. Calicut follows, then Vizagapatam and Bezwada. Circars cities favour the higher reaches of this table. The lowest figures are Tinnevelly, 511 per thousand, and Salem 518. It is odd that Palamcottah's figure should be so much higher than Tinnevelly's ; one might almost have expected the reverse.

The proportion of earners among females is greatest in Vizagapatam. The succeeding names are Guntur, Rajahmundry, Bezwada, Masulipatam and Cocanada. Once again the Circars cities are found at the top in numbers. What this reflects it is difficult to say; probably these being newer cities the residential element is less marked and a greater proportion of actual workers might be expected. Coimbatore is easily last in its proportion of female earners with 222 per thousand. Its nearest neighbour is Calicut where it is 322.

29. After the subsidiary tables in this chapter will be found printed the statistics of educated unemployment resulting from the enquiry mentioned earlier. The figures show that these are in no way complete. A scrutiny of the applications for clerical and other employment received by Government and by firms in Madras shows that as a record of absolute numbers these figures are a great underestimate. They are not even numerous enough to give reliable indication of relative distribution among districts. The predominance of Hindus is noteworthy but this was known beforehand. The majority are shown as sons of cultivators, the next most important item being clerical or professional. That so large a proportion should be the sons of cultivators may possibly be taken as an indication of how the educated youth are turning from the land. The great majority showed unemployment lasting over a year, a significant fact. The largest proportion was between ages 20 and 24. B.A.'s were a sixth of the total number. **Educated unemployment.**

APPENDIX I.

INDUSTRIES.

(By L. B. Green, Esq., M.B.E., Deputy Director of Industries.)

Part I—General.

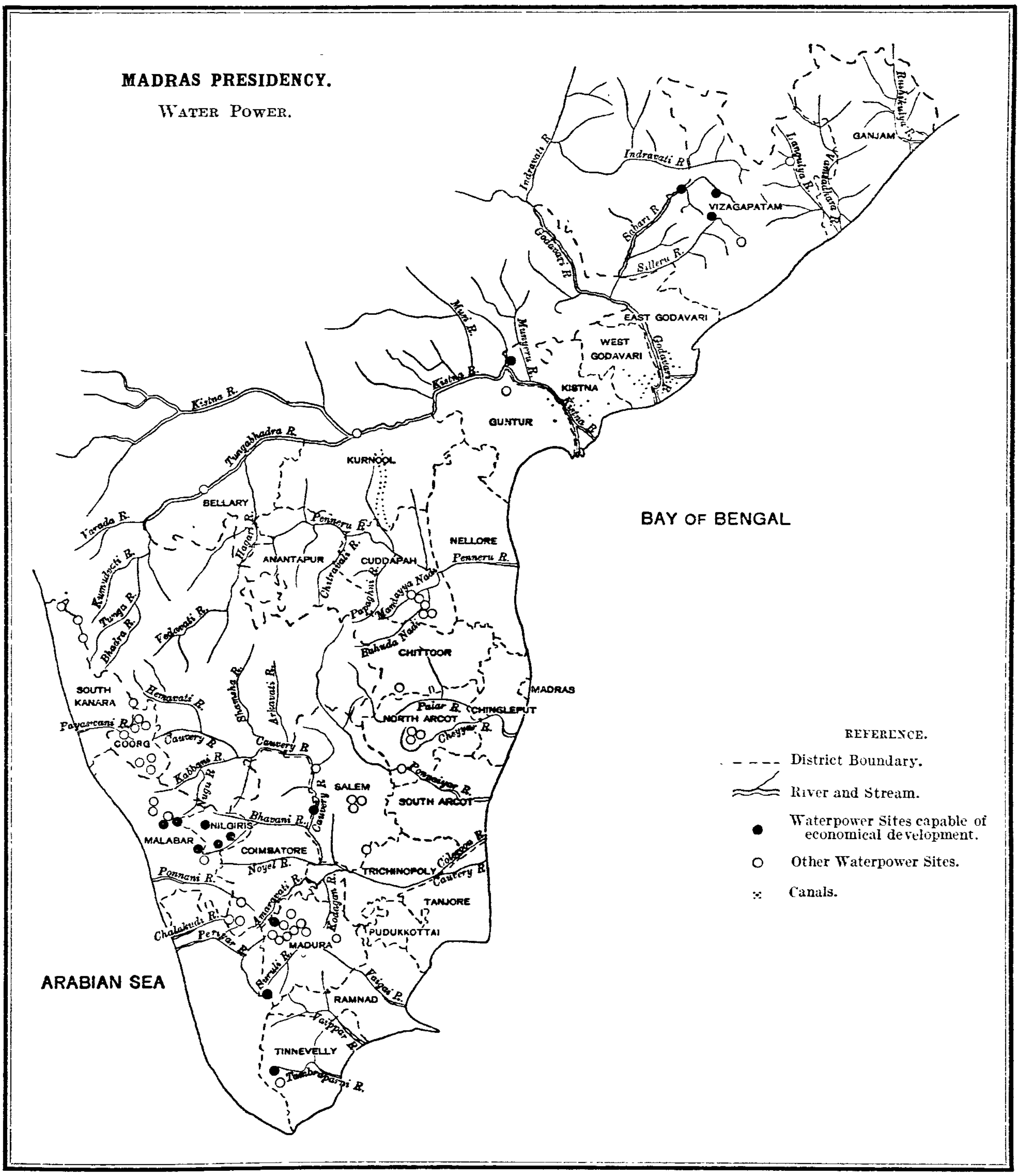
Water-power development.

General remarks.—Among the many difficulties which have tended to restrict the development of industries in South India are the high price and scarcity of fuel, but the position in this respect will be greatly improved in the areas affected when cheap electric power is available from the Pykara, Mettur and possibly other hydro-electric projects. Madras is comparatively rich in water power but up to the present no appreciable amount has been developed. The consumption of electric power *per capita* in the presidency is lower than that of any other large country in the world, and all coal and oil used for fuel or illumination has to be imported. Any large power site which can be economically developed must therefore be of great benefit to the presidency not only from the standpoint of revenue which such a scheme would produce, but also from the reduction in imports of coal and oil and the consequent release of additional capital for investment in the province. It is estimated that over 300,000 K.W. or 400,000 horse-power of continuous power is available for economic development in the presidency. The decade under review has seen the commencement of two projects of first-class importance. The Pykara Hydro-Electric Development is now under construction and is expected to be completed in 1932. The first stage includes three 10,900 h.p. generating units while the final development will be capable of producing 60,000 h.p. continuously and 100,000 h.p. at periods of maximum power demand. The location of the project is near the Pykara Falls on the north-west of the Nilgiris plateau and power will be supplied to Ootacamund, Coonoor, tea estates in the Nilgiris, and to Coimbatore, Tiruppur, Pollachi and the Anamalais. When the Mettur dam is completed, electric power will be generated on the spot from the head of water in the reservoir and a minimum of 15,000 h.p. will be available continuously. The proposal is to link Mettur with the Pykara scheme, designing the Mettur plant for the base-load with Pykara taking up the peaks of the loads. The plant will consist of four turbines, one of them a spare, each of capacity 5,300 h.p. at 60 feet head and 14,600 h.p. at 160 feet head. At an average head of 125 feet and discharge 2,750 cusecs, the power developed would be 33,000 h.p. while 49,000 h.p. could be generated in an emergency. The power will be available for supply to industrial concerns that may establish themselves in the area.

There is every reason to hope that consequent on the hydro-electric developments referred to, industrial development generally will receive a distinct impetus. Madras is not rich in minerals and the development of industries in the presidency is likely to be chiefly in the direction of converting and working up into manufactured or semi-manufactured form the agricultural and forest products of the province. For instance there is scope for the setting up of additional cotton spinning and weaving mills and for the development of the oil-crushing industry in its various forms. Nevertheless, under the changing conditions, the question of developing other industries is bound to receive attention, and during the next decade an increase in industrial employment should be seen provided that economic conditions generally improve.

Chemicals.

The suitability of Madras as a centre for the manufacture of certain basic chemicals has been investigated from time to time, but the conclusion arrived at was that the prospect of the development of a heavy chemical industry in Madras was remote owing to the high cost of fuel. In any attempts to foster the development of chemical industries in India attention should be directed in the first instance to such industries as can utilize Indian raw materials now exported to foreign countries where they are worked up into various finished products. In this category may be included the raw materials from which vegetable oils, artificial fats and feeding cakes are manufactured and those from which valuable essential oils and medicinal drugs are prepared. The fact that during the next few years, cheap electric power will be available, seems to justify a re-examination of the possibilities of establishing certain chemical industries in this presidency. Second only to sulphuric acid in importance for the development of chemical industries are the alkalies (sodium carbonate and sodium hydroxide) since little expansion of other industries can take place unless these chemicals are available at a low price. The bulk of the caustic soda now manufactured in America and Europe is prepared electrolytically from aqueous solutions of common salt. The power for generating electricity is usually and most cheaply provided by water power and so the Niagara Falls in America and the waterfalls in Norway and other countries rich in water power are the main seats of this industry. The erection of plant for the production of cyanamide and metallic nitrates from atmospheric nitrogen for manurial purposes would not, however, be a commercial proposition unless these could



MADRAS PRESIDENCY.
WATER POWER.
BAY OF BENGAL
ARABIAN SEA
REFERENCE.
District Boundary.
River and Stream.
Waterpower Sites capable of economical development.
Other Waterpower Sites.
Canals.
GANJAM
VIZAGAPATAM
EAST GODAVARI
WEST GODAVARI
KISTNA
GUNTUR
KURNOOL
BELLARY
NELLORE
ANANTAPUR
CUDDAPAH
CHITTOOR
MADRAS
CHINGLEPUT
NORTH ARCOT
SOUTH KANARA
COORG
SALEM
SOUTH ARCOT
NILGIRIS
MALABAR
COIMBATORE
TRICHINOPOLY
TANJORE
PUDUKKOTTAI
MADURA
RAMNAD
TINNEVELLY
Indravati R.
Godavari R.
Sabari R.
Silleru R.
Kistna R.
Tungabhadra R.
Penneru R.
Cauvery R.
Bhavani R.
Noyel R.
Ponnani R.
Chalakudi R.
Periyar R.
Amaravati R.
Vaigai R.
Vaippar R.
Tambraparni R.
Palar R.
Cheyyar R.
Ponnaiyar R.
Coleroon R.
Varada R.
Tunga R.
Bhadra R.
Hemavati R.
Kabbani R.
Arkavati R.
Shimsha R.
Hagari R.
Chitravati R.
Papaghni R.
Bahuda Nadi
Muni R.
Munyeru R.
Ganjam
Languliya R.
Vamsadhara R.

be manufactured in India at a figure which would admit of their being exported to Ceylon, the Malay Peninsula and the Dutch East Indies so as to compete with European, American or even Japanese products. It is perhaps doubtful whether the manufacture of cyanamide in India can at present be considered a commercial proposition.

The difficulty attending the manufacture of ammonium sulphate is that only very large units can be expected to pay even under the most favourable conditions and it is a question for investigation by chemical manufacturers whether a factory established in the Madras Presidency would be in a position to produce synthetic nitrogenous fertilisers at a price less than that at which they could be imported. It may be noted, however, that the demand for these fertilisers is steadily growing. A few years ago, the Agricultural Department in Madras supplied fertilisers to planters only, but to-day the demand in the villages is not inconsiderable. Very many of the difficulties attending the application of the manure have been dealt with and when they have been further overcome, the market should expand to a marked extent.

Pulp and paper.

Mettur on the completion of the Project would appear to offer considerable scope for the establishment of a pulp and paper industry. In view of the heavy capital requirements of the industry, the first essential is a continuous and assured supply of the raw material. Investigations recently undertaken by the Forest Department indicate that an assured supply of bamboos exists and that the fundamental problem of getting the supply to a mill at Mettur would not present insuperable difficulty. The raw material occurs within 40 miles of Mettur and bamboos in exploitable quantities are found over an aggregate of 35,000 acres in the reserves of Ramapuram forest range. The Ramapuram bamboos are not, however, the only possible source of raw material for a pulp or paper mill at Mettur. A plant producing 10,000 tons of pulp is the smallest that would be economically feasible and an annual supply of 22,500 tons of air dry bamboos is the minimum required to work a pulp mill at a profit. If, however, a paper instead of a pulp mill were established at Mettur, a smaller mill producing about 5,000 tons of paper would be an economic proposition. As the Forest Department estimate that from Ramapuram Forest Range alone an annual outturn of 25,000 tons of air dry bamboo could be extracted and delivered at mill site at Mettur for less than Rs. 15 a ton an adequate and sustained supply of raw material at a reasonable price should be assured. The prospects of a pulp or paper mill at Mettur would therefore seem to be reasonably promising. There is ample bamboo within economic reach of Mettur whilst many other essential conditions appear to be favourable.

Cement.

The possibility of establishing a factory for the manufacture of cement in the Madras Presidency has been examined on a number of occasions during the last ten years. The imports of cement into the presidency during the last few years have averaged about 33,000 tons annually while a considerable quantity is brought in by rail. It is probable that the next few years will see the long deferred establishment of this industry and that a factory will be set up either at Madukarai in the Coimbatore district where cheap electric power will be available from the Pykara project or at Bezwada in the Kistna district, the choice of site depending to some extent on whether or not the Tungabhadra project is proceeded with.

Iron.

The development of electric power on a considerable scale at Mettur and the consequent availability of a cheap supply a few years hence opens up the question of the exploitation of the Salem iron ores with power derived from the Mettur project. The history of the attempts to manufacture iron by European processes in the Madras Presidency dates back to the early part of last century. The presence of rich iron ores in the southern taluks of Salem district and the existence of an ancient indigenous iron smelting industry in numerous centres of this area, an industry which though working with exceedingly crude appliances produced excellent wrought iron and steel, attracted attention so far back as 1818, and a number of unsuccessful attempts were made to establish an iron industry on a large scale. The conclusion that emerges from a study of the documents bearing on the question of the Salem iron ores is that the obstacle in the way of their development was the difficulty of obtaining a continuous and sufficient supply of cheap fuel. The availability of electric power from Mettur, which is only about 40 miles from Kanjamalai, would appear to justify a re-examination of the question and it would probably be well worth while for a prospective manufacturer to verify the existing data by arranging for a magnetic test to be carried out on a bulk sample of the ore.

A reference to the Salem magnesite industry will be found in a later paragraph. It seems possible that there will be some development during the next few years in the manufacture of dead-burnt magnesite as also of 'fused' magnesite and metallic magnesium. A market is already developing in 'fused' pure magnesite, and such magnesite is fused with cheap electric power in Switzerland.

Small scale industries.

When cheap electricity becomes available, it should be possible to develop greatly in what are to-day purely rural areas, small scale industries for working up into manufactured or semi-manufactured form the agricultural products of the province and thus to improve the economic condition of the villages with a consequent increase in the amenities of life in the countryside. Electricity, where available at a reasonable price, will provide greatly improved facilities for the development of rural tracts. Electric power can be used for such varied purposes as pumping, sawing, fodder cutting and grinding, rice hulling, groundnut decorticating, oil milling, cotton ginning, bone crushing, sugarcane crushing and sugar manufacture. The development of textile industries in the home will also be fostered by a cheap electric supply, whilst the setting up of small textile factories of various descriptions should receive a stimulus. As is well-known, the Department of Industries in the Madras Presidency was responsible, some quarter of a century ago, for demonstrating the advantages of irrigating small areas of land by engines and pumps. Oil engines were also installed under the advice and with the aid of the department in rice mills and other small industrial concerns. The oil engines first used were worked by kerosene, but subsequent experience indicated that liquid-fuel could equally well be used, and as a result this gradually displaced kerosene for use in oil engines. The great reduction in the cost of generating power consequent upon this discovery gave a considerable impetus to the development of small power installations. These were principally applied, apart from pumping purposes, to the preparation of agricultural produce for the market and in the course of a few years numerous rice hullers, oil mills and other forms of industrial machinery were installed. It is probable that in the areas served by the hydro-electric developments, liquid-fuel burning oil engines will in their turn have to give way to electricity. The comparatively small number of acres irrigated from wells in this presidency shows that only a limited use has been made of the great supply underneath. It is obvious, therefore, that if only more wells could be dug and the water lifted cheaply, agriculture would to a great extent become independent of the vagaries of the weather. Electric pumping for irrigation has been initiated in the State of Mysore with, it is understood, encouraging results and a considerable measure of success in this direction has also been achieved in the Punjab and the United Provinces. The availability of electric power at Mettur, for instance, suggests the possibility of sinking wells along the banks of the Kaveri as well as in the vicinity of the transmission lines, and the carrying on of irrigation by means of motor pumps run by electric power. The current could be carried across country to the points at which the power is required; receiving stations could be established there and the current transformed down to a reasonable pressure and from the sub-stations, radiated to the mills and irrigation wells in the vicinity at which motors would be installed to drive the various machines and pumps. The provision of wells on the banks of the river with pumps driven by electric motors does not seem impracticable, although it will be a matter for careful investigation within what area it would be advantageous to set up such installations. It may be possible to provide for irrigation by electric pumping from a group of wells in suitable areas within the radius served by the electric supply schemes, whilst it is conceivable that large acres of land could be brought under industrial crops thus facilitating industrial development. It seems safe to predict that within the next decade a marked expansion of irrigation from wells by means of electric pumping will be seen.

State aid to industries.

Industrial Policy—State Aid to Industries Act.—The most important event of the decade under review from the standpoint of industrial policy was the passing of an Act to afford State aid to industries. The Madras Board of Industries which considered in 1921 the question of financial and other forms of assistance to new industries passed a resolution to the effect that the assistance afforded by banks to new industries was not adequate and recommended that the Government should have power to make advances for the establishment of new industries. It was owing to a recognition of the fact that the assistance afforded by the various banks to new industries was not adequate and that it was essential to industrial development that Government should have power to make advances for the establishment of new industries that it was decided to promote the Madras State Aid to Industries Bill, introduced in the November session of the Legislative Council in 1922. It was warmly supported in the Council by representatives of all sections of the public and was passed with certain amendments and modifications in the subsequent session amidst every manifestation of popular approval.

The Act is intended to assist in the establishment and development of industries which must be such as have an important bearing on the economic development of the province and must be

(*a*) new or nascent industries or

(*b*) industries to be newly introduced into areas where such industries are undeveloped or

(*c*) cottage industries.

It is laid down in the Act that no such aid shall be given to any Joint Stock Company unless

(a) the same is registered in India on a rupee capital and

(b) the company conforms to such rules as may be made by the local Government from time to time requiring that a minimum number or a proportion of the members of the Board of Management shall be Indians.

Under the Act, the local Government have power to give aid to an industrial business or enterprise in one or more of the following ways :—

(a) by granting a loan,

(b) by guaranteeing a cash credit, overdraft or fixed advance with a bank,

(c) by paying a subsidy for the conduct of research or for the purchase of machinery,

(d) by subscribing for shares or debentures,

(e) by guaranteeing a minimum return on part of the capital of a Joint Stock Company,

(f) by making a grant on favourable terms of land, raw material, firewood or water, the property of the local Government.

Under the provisions of the Act as originally framed no loan could be granted of an amount exceeding 50 per cent of the net value of the assets of the industrial business or enterprise after deducting existing encumbrances. Subsequently, the Act was amended so as to empower the grant of a loan to a concern up to a limit of Rs. 40,000 even if it exceeds 50 per cent of the value of its net assets. Government have, however, ordered that whenever a loan is granted under section 9 of the Act as amended by Act VI of 1930, to a person in respect of any individual business or enterprise of an amount exceeding 50 per cent of net value of the assets, it should be secured by a mortgage or floating charge upon the whole of the assets of the business or enterprise, as well as by such collateral security as will bring the value of the entire security available up to at least twice the amount of the loan granted, though in the case of industrial businesses or enterprises with a capital outlay not exceeding Rs. 1,000 and cottage industries a loan may be granted of an amount not exceeding the value of the security offered. The Act has been further amended in various ways so as to make aid more readily available to small scale and cottage industries.

The interest charged on the loans advanced under the Act must not be less than one-half per cent above the rate at which the Madras Government have last borrowed for the Provincial Loan Account. The rate has recently been raised from 6½ to 7½ per cent.

Up to the 1st January 1932, 72 applications had been considered by the Board of Industries of which 16 for loans were granted. One for the lease of 30,000 acres of forest area of timber for match manufacture was also granted. The remaining applications were rejected either because they did not satisfy the provisions of the Act, the security was unsatisfactory or inadequate, or Government were not convinced of the inherent soundness of the scheme and the possibilities of development, or for other reasons. The loans actually sanctioned and disbursed were 17 in number (including 2 to the Carnatic Paper Mills) involving an aggregate amount of Rs. 8,27,815–8–0.

It cannot be claimed that during the period the Act has been in force it has been successful in stimulating industrial development to any appreciable extent and certainly the results have not so far fulfilled expectations, while the position of the majority of the concerns to which financial assistance has been rendered since the Act was brought into force affords little ground for satisfaction. It was thought at one time that it was in the direction of assisting financially industrial co-operative societies for the purpose of utilizing and working up into manufactured form the agricultural produce of the province, that the Act would find its greatest scope and usefulness, but actually only one loan has been granted to a co-operative society of this kind. The State Aid to Industries Act in effect functions as an industrial bank on a small scale and there may be those who see in the paucity of satisfactory applications for financial assistance an indication that the difficulties in the way of industrial development in the Madras Presidency are not entirely financial in character.

Minerals.

Minerals.—Mining is carried on in the Madras Presidency in the districts of Bellary, Cuddapah, Nellore, the Nilgiris, Salem, Trichinopoly and Vizagapatam and the principal minerals that were worked during the decade were manganese, magnesite, mica, barytes, gold, silver, steatite, corundum, asbestos, phosphatic nodules and gypsum. Of these only the first three are of importance.

Manganese.

Manganese.—In the previous decade, Vizagapatam was the only important producing district but since 1922, manganese has been worked in Bellary also. During the year 1924–25, nearly 400 tons were produced in Kurnool but there has been no production of this mineral in that district subsequently. In 1930, a production of 50 tons was for the first time

reported from Cuddapah. The total production in the presidency during each of the last eleven years is given below :

Year.	Tons.	Year.	Tons.	Year.	Tons.
1920 ..	7,386	1924 ..	41,670	1928 ..	34,351½
1921 ..	16,593	1925 ..	32,334	1929 ..	35,068½
1922 ..	10,845	1926 ..	30,040	1930 .	16,723
1923 ..	25,112	1927 ..	37,983		

As will be seen, the output, which does not include the production in Sandur State, was less than 10,000 tons only in 1920, rose to over 40,000 tons in 1924 and subsequently has, with the exception of last year, been above 30,000 tons. Production in Sandur State during the years from 1921–29 rose steadily from 567 tons in 1921 to 145, 961 tons in 1930, or an average of nearly 78,000 tons per annum. Exports of manganese ore from the presidency during the last decade have averaged just over 20,000 tons per annum, i.e., the total exports during the decade slightly exceeded 200,000 tons against 191,865 tons in the previous decade. The average price per unit of manganese ore f.o.b. Indian ports which was 23·46 *d.* in 1920 fell to 8·70 *d.* in 1922 and after rising to 16·86 *d.* in 1924 again declined gradually to 12·22 *d.* in 1928. The fall in price has since proceeded further owing to the restricted demand consequent on the world-wide depression in the iron and steel industry. Indian manganese is also suffering from the world over-production of the mineral and from the competition of the cheaper Russian product. The outlook is therefore far from hopeful and improvement must be dependent on a general recovery in economic conditions. The number of workers under the head " Manganese production " was 1,047 of which British Territory accounted for 350 and the Madras States the balance of 697.

Mica.

Mica.—As a producer of mica, India holds the premier position in the world and among mica producing provinces, Madras is second only to Bihar and Orissa in importance. The production of mica in the presidency during the last decade is given below :—

Year.	Tons.	Year.	Tons.	Year.	Tons.
1921 ..	222	1925 ..	895	1928 ..	529
1922 ..	83	1926 ..	675	1929 ..	561
1923 ..	499	1927 ..	599	1930 ..	764
1924 ..	600				

Nellore is the chief producing district, the output in the Nilgiris never having risen above 22 tons in any year. The exports from the presidency are given in the attached statement.

Years.	Quantity.	Value.	Years.	Quantity.	Value.
	CWT.	RS.		CWT.	RS.
1920–21 ..	7,334	8,54,880	1926–27 ..	10,207	14,56,908
1921–22 ..	5,071	6,90,331	1927–28 ..	12,603	13,36,893
1922–23 ..	2,086	1,94,272	1928–29 ..	11,604	16,03,111
1923–24 ..	6,218	7,74,447	1929–30 ..	12,522	17,17,195
1924–25 ..	10,482	13,66,682	1930–31 ..	11,084	10,93,620
1925–26 ..	9,880	12,99,943			

In the Nellore district owners of mica mines have continued the " open cast " method of extraction and the industry here would probably be considerably improved by the adoption of scientific methods of extraction with a view to exploiting the underground deposits instead of, as at present, depending only on the surface yield. Competition in the mica market is very keen, but over a period of years there should be a good future for the mica mining industry provided it is developed on right lines, as the mineral, on account of its superiority as an insulating material, has come to be indispensable in the electrical industry. According to the census return the number engaged in mica mining in the Madras Presidency was 3,139.

Magnesite.

Magnesite.—There are very extensive deposits of some of the finest magnesite in the world in the Salem district, but the deposits do not appear to be worked to an extent at all comparable with their magnitude. Magnesite continues to be mined by open quarrying operations and calcined on the spot in gas-fired kilns to produce lightly calcined or caustic magnesia obtained at a temperature of 800° C. and to a much smaller extent dead burnt, sintered, or shrunk magnesia obtained by calcination at about 1,700° C. Salem is the principal producing district in India, the output from Mysore (the only other area of production) having in every year of the decade been less than 3,000 tons. The average annual production from Salem and Mysore during the years 1919 to 1923 amounted to 18,039 tons valued at Rs. 2,15,788 ; in 1924–25 it rose to 25,717 tons valued at Rs. 2,90,376, followed by a record production in 1926 of 30,461 tons valued at Rs. 3,54,355. Detailed figures of production of Salem alone are given below :—

Year.	Tons.	Year.	Tons.	Year.	Tons.
1921 ..	17,152	1925 ..	29,620	1928 ..	22,542
1922 ..	18,417	1926 ..	28,676	1929 ..	22,134
1923 ..	19,336	1927 ..	16,966	1930 ..	15,563
1924 ..	24,427				

Production in Salem district increased steadily up to 1925, after which it showed a tendency to decline, and although the output in 1928 and 1929 was larger than in the years

prior to 1924, the output in 1927 and 1930 was less than that in 1921. The following table shows the amount of magnesite manufactured during the decade and exported by the Magnesite Syndicate which employs over 1,500 hands on an average :—

Year.	Manufactured tons.	Exported tons.	Year.	Manufactured tons.	Exported tons.
1921 ..	6,898	6,904	1928 ..	8,958	8,990
1922 ..	6,347	6,505	1929 ..	8,405	8,594
1923 ..	6,746	6,502	1930 ..	7,498	7,488
1924 ..	10,998	10,812			
1925 ..	13,193	13,540	Total ..	**89,027**	**88,883**
1926 ..	10,166	9,959			
1927 ..	9,818	9,589			

The chief countries competing with India are Austria, the United States and Greece. The Austrian material with its higher iron content makes a satisfactory lining for steel furnaces and is, for this reason, in demand by the iron and steel industry. Greece produces more calcined magnesia than any other country and supplies most of the needs of Europe. The Indian material approaches closer to the Grecian type than to the Austrian and prior to and after the War the Indian exports have been required more for the manufacture of cements and similar products than for refractory linings. During the War, ferric oxide was added to Indian magnesite in order to produce a dead burnt commodity suitable for metallurgical purposes and as this description of magnesite is in large demand it seems possible that the future will see an expansion in its production in India. The greatest consumer of magnesite is the United States of America and a large percentage of the Indian exports go to that country ; 58 per cent of India's production, for instance, corresponding to 17,200 tons of the crude mineral were imported into the United States in 1925. As that country, however, possesses large deposits of the mineral the import duty on magnesite into the United States of America was raised in November 1927 from 14 to 21 dollars per ton and this has resulted in a heavy reduction in the tonnage exported to that country, while the profit on the reduced shipments is said also to have declined. The industry was affected also by the increased quantity of Grecian magnesite offered in Europe as a result of the higher American tariff. As the world's supplies of magnesite are greater than the demand successful development is largely a matter of geographical position and available markets. The Salem magnesite industry is capable of large expansion but unless new outlets can be found for the mineral the outlook for the industry appears to be the reverse of promising. Salem calcined magnesite is considered about the best in the world for magnesite composition floorings and other similar building purposes, and there seems a reasonably good prospect of this branch of the industry developing, although sales within India have not recently shown much improvement and the progress in the demand for flooring tiles is slow. The availability of cheap electric power on the completion of the Mettur Project may, however, enable new magnesite products to be manufactured at competitive prices. A new process has been evolved recently for the manufacture of magnesium metal from magnesite, and as magnesium metal is lighter than aluminium the demand for it is expected to be great. A market is already developing in fused pure magnesite and it should be practicable to fuse such magnesite with cheap electrical power at Salem as is done in Switzerland.

Other minerals.

Gold and Silver.—Anantapur was the only district where gold and silver were mined but operations were finally suspended from 2nd August 1927 owing to the exhaustion of the ore. The total quantity of gold and silver won during the years 1921 to 1927 is given below :—

	Oz. troy.		Oz. troy.
Gold	27,274	Silver	581

Barytes.—Kurnool district was the sole producing area up to 1929 in which year Cuddapah also entered the field, but the quantity mined from that district in the two years 1929 and 1930 has been small, viz., 43 and 154 tons respectively. The production in the presidency for the last decade is given below :—

Years.	Tons.	Years.	Tons.	Years.	Tons.
1921 ..	470	1925 ..	580	1928 ..	620
1922 ..	789	1926 ..	350	1929 ..	805
1923 ..	1,751	1927 ..	851	1930 ..	4,389
1924 ..	783				

This gives an average annual production of 1,139 tons.

Steatite.—In 1919 a production of four tons of steatite was reported from the Kurnool district but there was no further production until 1924 when another four tons was produced, followed in 1925 and 1926 by an output of four and three tons respectively since when there has been no production there. Seventy-seven tons of steatite was produced in 1923 in Nellore followed in 1925 and 1926 by a production of 82 and 65¾ tons. There was no production in 1924 nor after 1926.

Corundum.—The mining of corundum from Salem district was first reported in 1926 when there was a production of 17⅓ tons followed by an output of 22½, 21, 25 and 29 13/16 tons in subsequent years.

Asbestos.—This mineral was also first mined in 1926 in Cuddapah district. The production during the last five years has ranged from 8½ tons to 88½ tons, the average annual production being 34 tons.

Phosphatic Nodules and Gypsum.—Although phosphatic nodules and gypsum appear to have been produced in the Trichinopoly district for several years, the output was formally reported for the years 1929 and 1930 only, 22½ tons of each being mined in 1929, while in 1930 the output was 31½ tons of phosphatic nodules and 8¾ tons of gypsum. Attempts were made during the decennium to utilize in a finely powdered form the phosphates in the Trichinopoly district as a fertilizer on South Indian coffee plantations; but the scheme was found unremunerative and the mining leases taken out were few and far between. The efforts of the Department of Industries to aid in the exploitation of the deposits were not attended with encouraging results and subsequent attempts to export the crushed nodules to Ceylon, where there was said to be considerable demand, were also unsuccessful. The deposit of phosphates in the Trichinopoly district is one of the two principal ones in India but the sparse distribution of the nodules and their high calcium carbonate content are factors to be considered in any attempt to manufacture super-phosphate.

Salt.—The annual production of salt in this presidency from sea water has averaged over 440,000 tons and the output of each year and its value is given below :—

Year.		Tons.	Value.	Year.		Tons.	Value.
			RS.				RS.
1920	..	453,547	29,78,471	1926	..	481,826	42,81,239
1921	..	446.113	26,22,460	1927	..	543.081	47,63,741
1922	..	465.929	29,43,066	1928	..	448.538	26.36,046
1923	..	485.569	30.70.226	1929	..	421,208	24,86,220
1924	..	407.544	27,32,822	1930	..	341,756	19,53,961
1925	..	336,605	21,06,161				

Madras salt is invariably consumed in the presidency itself and the contiguous Indian States. About 15,000 tons used to be exported annually to Ceylon but during the last two years, exports from the presidency have been negligible.

Mineral wealth.—It will be apparent that from the point of view of its mineral wealth this presidency is not of very great importance. The one marked deficiency is the absence of coal, the prospecting for this mineral in the Godavari valley not having been successful. As shown, however, in an earlier paragraph, the several hydro-electric projects which are either under construction or have been surveyed should go far to remedy the deficiency and admit of the exploitation of the natural resources of the presidency. Electricity is a more than useful substitute for any other form of fuel. The population supported by the exploitation of minerals, according to the census was 15,190, distributed under Metallic minerals 1,096 and Non-metallic minerals 14,094. According to the census of 1921 the total employed on mineral production was 9,288 and so if the figures are strictly comparable there has been an increase of nearly 6,000 persons. The chief items making up the total are building materials (8,663), mica (3,139), salt, saltpetre, etc. (2,201) and manganese (1,047).

Raw materials.

Other raw materials.—Turning to the other raw materials which are chiefly cotton, oil-seeds (mainly groundnut) and hides and skins, it cannot be said that during the last decade there was any marked improvement in this presidency in utilizing these raw materials so as to convert and work them up into manufactured or semi-manufactured form. The area under cotton in India is about 25 million acres and the yield about 5 million bales (400 lb. each), the contribution from Madras being roughly one-tenth. Of this quantity, the mill consumption of Indian cotton in the whole of India is about two million bales and India exports almost the entire balance. The average export of cotton from the Madras Presidency has during the last ten years amounted to 30,000 tons or 168,000 bales and there seems no doubt that having regard to the quantity of cotton grown and exported and the imports of yarn and cloth, there is considerable scope for the setting up of additional spinning and weaving mills. This question will be referred to in more detail in the second

Oil seeds.

part of this chapter. Oil-seeds are of great economic importance to the presidency owing to the variety of the seeds and the extent of their production. Only a very small percentage, however, of the annual outturn of oil-seeds is converted into oil, the greater portion being exported to foreign countries. In 1929–30 (a fairly normal year) the value of exports of seeds amounted to Rs. 1,412·30 lakhs or 33 per cent of the value of the total foreign export trade of the presidency in Indian produce and manufacturers. The average annual export of seeds has been of the order of 600,000 tons valued at over Rs. 10 crores. It has been pointed out on numerous occasions that it is unsound economically to export the seeds in

large quantities instead of manufacturing oil and oil-cake in the province itself since not only does it take away from the country much useful material in the form of cattle food and manure, but it also gives the manufacture to other countries. The difficulties attending the development of the oil crushing industry on a large scale so as to permit of the substitution of the export of vegetable oil for the export of oil-seeds, however, are very great. Marseilles, Hamburg and other oil crushing centres abroad have already an established position in the world's markets for the different classes of oil and it would require a long period of good work for Indian mills to attain a reputation such as the Marseilles and Hamburg mills now possess. Another difficulty is in regard to packing. The cost of packing and shipment, whether the oil is contained in barrels, drums or tins, is heavy and there is considerable risk of leakage, loss or damage, whilst on the other hand the shipment of seed is comparatively easy and freights are relatively low. Finally there is the great difficulty of overcoming the high protective tariffs which are in force in France and Germany. There is a considerable consumption of vegetable oils in the presidency, but the internal demand for oil in its present form is probably not capable of indefinite expansion as it is mainly local and is apparently satisfied by the output of the existing mills, although in regard to groundnut oil the internal demand is often not sufficient to keep the mills working at full capacity. Clearly therefore the exploitation of the vast oil-seed resources of the presidency must depend to a great extent on industrial development and the setting up of factories utilising vegetable oils as a raw material such as soap factories. A still more important outlet for vegetable oils probably lies in the manufacture in India of vegetable fats on a large scale. This is likely to develop and should be encouraged as the development of the industry would result in the utilization in the country itself of an increasing quantity of the oil-seeds it produces, whilst an increased quantity of oil-cake would become available to ryots at a cheaper price for use as manure. An increased internal demand for vegetable oils for industrial purposes would also assist to maintain the price of the seeds. It has been said that one reason why oil-cakes are exported to Europe from India is that owing to poor expression they contain so much oil that it pays to re-express them in Europe, and it is the case that with the ordinary milling methods in force an undue proportion of the oil remains in the cake. The position in this respect should gradually improve as oil expellers and other improved oil milling machinery are introduced, though it is doubtful whether it is practicable to extract such a high percentage of oil from the seed in India as is done in Europe, and moreover it is perhaps unlikely that the demand from Europe for oil-cakes would wholly cease even if the percentage of oil extracted from the seed was increased. The question is difficult because the amount realized for the cake forms an important part of the economy of a mill, and as the oil crushing industry develops larger supplies of cake will become available. Even in the present stage of development of the oil milling industry, the mills have to rely largely on foreign buyers for the cake they produce and in the absence of an export demand milling would in most cases be unprofitable. The discouragement or prohibition of the export of oil-cake, as is so often urged, would therefore inevitably retard the development of the oil-seed crushing industry, unless in the meantime the ryot had become more educated to the use of the cake.

Hides and skins.

As regards hides and skins, Madras has built up an export trade in tanned hides and skins valued at over six crores of rupees annually, whilst the exports of raw hides and skins (the latter chiefly) including cuttings of raw hides and skins, have averaged about 5,000 tons annually valued at about Rs. 45 lakhs. As is well known the bulk of the skins exported are tanned, but not dressed, whilst hides are usually crust tanned for export and have to be subjected to further treatment known as currying after they reach foreign markets before they can be regarded as finished leather. Reptile skins, however, in which a lucrative trade has been developed during the decennium under review, are generally exported in a finished condition and do not require any subsequent treatment. It seems probable that Madras tanned hides and skins will retain their popularity in the British market provided they can be supplied at prices which are attractive to the tanners and curriers there. Buyers of Madras tanned kips appear to be satisfied with the present type of leather exported from Madras and ask for the quality of the leather to be maintained as it is, and the view of the exporting houses appears to be that so far as the export trade is concerned, the most promising course is to endeavour to tan a leather of the class of the present Madras kip at a cheaper rate rather than to aim at producing finished leather for export. The technical difficulties in the process of manufacture of finished leather in India are not insurmountable, but most foreign countries other than Great Britain have a tariff in favour of raw or in some cases, partly tanned hides and do not accept fully tanned leather, the currier or leather dresser in such countries preferring to purchase the raw or partly tanned material which he finishes according to his particular requirements and with reference to the prevailing fashion in footwear and other leather goods. Nevertheless there would appear to be scope for the carrying out of practical experiments

with a view to ascertaining whether it is possible in the Madras Presidency to manufacture leather from the local hides and skins as good as can be made from the same material in foreign countries.

Forests. There was no substantial development during the decennium under review in the exploitation of the forest reserves of the presidency and although saw milling by power was introduced on the West Coast on an extensive scale by Government, the mills have been closed down recently. The possibilities of establishing a pulp or paper mill at Mettur utilizing mainly bamboos as raw material have been referred to elsewhere. The probable early exhaustion of the world's wood pulp supply and the probable inability of wood to provide for the extremely rapid expansion of the cellulose-using industry and the timber-using trades will render necessary sooner or later the use of an alternative raw material for pulp. The reserves of pulp wood are diminishing so fast that a serious shortage may be seen within the lifetime of the present generation in which case Indian bamboos as a source of pulp should come into their own.

Plantations. The planting products, chiefly tea, coffee and rubber, contribute largely in normal times to the trade balance of the presidency, the value of exports of these having averaged about 4, 1½ and 1¼ crores respectively in each year. In view of the fall in the price of rubber and the large surplus stock available the question of the establishment in Southern India of a factory for the manufacture of finished rubber goods has been investigated. As, however, the rubber manufacturers in Great Britain and America consider that they can land rubber goods in India at a cheaper price than they could produce them in this country there is no inducement for them to set up a rubber factory, although there would seem to be no special technical difficulty in regard to the manufacture of such goods in India. In the case of rubber tyres the demand for particular sizes would hardly justify the installation of the elaborate high pressure moulding tyre presses which would be necessary. Inner tubes could no doubt be manufactured in India, but the question whether they could be produced at a cost which would admit of competition with the imported article is problematical. It is also doubtful whether rubber waterproofed goods, vacuum brake hose, packing rubber soles and surgical goods could be produced in India under present conditions and placed on the market at such a low price as the imported article. The market in India will have to expand considerably before the large scale manufacture of rubber goods in this country becomes practicable.

Acreage under forest and industrial crops.—The following tabular statement, extracted from the season and crop report for 1920–21 and 1930–31, shows in detail the area devoted to each of the crops grown in the presidency which are subjected to preparatory processes of an industrial or quasi-industrial character before they are put on the market.

Classification.	1930–31.	1920–21.	Difference.
	ACS.	ACS.	ACS.
1. Forests	13,207,150	12,985,852	221,298
2. Net area under cultivation ..	34,224,124	33,073,385	1,150,739
3. Net area cropped	39,193.201	37,553,000	1,640,201
4. Area irrigated from all sources ..	9,153,093	9,368,816	215,723
Acreage under each crop.			
Cereals—			
Rice	11,677,529	11,096,365	581,164
Oil seeds—			
Linseed	4,294	8,782	4,498
Gingelly	745,872	752,662	6,750
Groundnut	3,571,978	1,599,738	1,972,240
Castor	283,238	390,668	107,430
Coconut	565,971	544,747	21,224
Sugar—			
Sugarcane	114,877	103,308	11,569
Palmyra	74,018	83,616	..
Fibres—			
Cotton	2,041,284	2,121,628	80,344
Jute	2,690	678	2,012
Miscellaneous—			
Rubber	15,921	13,004	2,917
Dyes—			
Indigo	46,905	112,138	65,233
Drugs—			
Coffee	51,377	54,108	2,731
Tea	65,609	46,250	19,359
Tobacco	242,644	201,062	41,582

Industrial crops.

The decreases noticeable are under (1) area irrigated from all sources, (2) cotton, (3) coffee, (4) gingelly and (5) castor. The chief increases are in respect of (1) net area under cultivation, (2) net area cropped, (3) forests, (4) groundnuts, (5) rice, (6) coconut. (7) sugarcane, (8) tea, (9) tobacco and (10) rubber. The area under rice was higher than ever before during the decade. Owing to the high price realized for groundnuts until comparatively recently, the area under this crop has more than doubled during the last ten years. The acreage in 1930–31 was the highest reported (1928–29 excepted) when it was 3,679,349 acres. In 1895–96 the Madras acreage under groundnuts was only 243,000 while in 1907–08 it was only 837,000 acres. The total area devoted to the crop in the whole of India in 1913–14 was it may be noted about 2,100,000 acres only. Latterly ryots have shown a tendency to cultivate groundnut in preference to some other crops, e.g., castor, the area under which has fallen from over 500,000 acres in the previous decade (normal acreage) to less than 300,000 acres, as the demand for the seed has contracted since the war. In fact, the area of 390,668 in 1920–21, which was the lowest on record at that time, is still higher than that of any of the subsequent years. The acreage under gingelly has remained practically stationary, the fluctuations having been within rather narrow limits, i.e., from 681,890 in 1926–27 to 836,921 in the next year, the lowest and highest of the decade. The figure of 576,083 acres under coconuts was the highest in this decade, the lowest being 520,552 in 1923–24, after which it has been increasing more or less at a steady rate. The area under cotton seems to increase and decrease alternately in cycles of three years (with the exception of 1929–30 when there was a slight variation), although the fall in 1930–31 to 2,041,284 acres from 2,476,663 in the previous year is probably attributable to the prevailing trade depression. The area under tea and rubber has been increasing though not steadily and the figures for 1930–31 are the highest reported probably due to additional areas having been opened up when the price of plantation products was on a substantially higher level than that ruling during the year. The area under coffee which was 54,108 acres in 1920–21 and continued to keep above this level for the subsequent five years (1924–25 excepted) declined subsequently and in 1928–29 was only 47,275 acres, the lowest point touched during the decade. As regards tobacco, the acreage, which has always been above the level of 1920–21, reached the highest of the decade in 1924–25 when it was 260,707. The area under sugarcane also was above the 1920–21 level up to 1927–28, came down to less than 100,000 acres in the next two years and rose again in 1930–31 to 114,877. There is every possibility of a gradual but progressive increase in the area under this product consequent on the increased measure of protection accorded to the sugar industry. With the exception of 1921–22 and 1930–31 the area under palmyra has been above 80,000 acres, the area in the last year of the decade being the lowest. Owing to the absence of a steady demand, the indigo area has fluctuated widely ; it rose to 197,282 acres in 1922–23 the highest of the decade, came down rapidly to 40,181 in 1927–28, again rose to over 48,000 and 52,000 in the next two years and finally in 1930–31 decreased to 46,905. The stimulus given to the cultivation of indigo by the war was only temporary and with synthetic dyes again becoming available the acreage under indigo has been diminishing.

The census has revealed an increase of over 32 millions in the population of India and over 4·4 millions in the population of this presidency, i.e., an increase of about 10½ per cent in each. The repercussions—both economic and political—of this large increase on the available means of subsistence and the question whether the agricultural development of the country has kept pace with the increase in population seem deserving of careful study. Although comparing the years 1920–21 and 1930–31, the cultivation of paddy has increased by over 500,000 acres (if the average of the 11 years is taken, the increase is only about 30,000 acres) and of groundnuts by nearly two million acres (if the average of the 11 years is compared with the acreage in 1920–21, the difference is less than one million acres), such increase as has occurred appears to have been largely at the expense of other crops. The area under food crops in 1921–22 was 31,128,000 acres and that under non-food crops was about 6,405,000 acres, the latter representing 17 per cent of the total area under crops. In 1928–29 food crops amounted to 74 per cent of the total area and non-food crops 24 per cent. In the next year the percentages were 78 and 22. The area under food crops in 1929–30 was 30,458,762 acres, and that under non-food crops 8,800,491 acres respectively, an increase of nearly 2,400,000 acres under non-food crops and a decrease of about 670,000 acres under food crops as compared with the year 1921–22. It is a question whether the increase in the area brought under cultivation (net area in 1921–22 was 33,012,244 against 34,372,101 in 1928–29 and 34,224,124 in 1930–31) is sufficient to meet the needs of the additional population revealed by the census assuming that the combined agricultural, industrial and other incomes derived at the beginning of the decade was sufficient to meet the needs of the population existing then. It will be noted that while the population increased by 4½ millions, i.e., by 10·5 per cent, the net area under cultivation increased only by about one million acres, i.e., by 3 per cent.

Trade.

Trade statistics.—The following table shows the expansion in value of the private external trade in merchandise, excluding gold, silver and currency notes, of the presidency during the last ten years :—

Year.	Seaborne trade.		Coasting trade.		Total.	
	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.
1921–22 ..	2,087	2,502	1,760	1,013	3,847	3,515
1922–23 ..	2,029	2,889	1,917	1,165	3,946	4,064
1923–24 ..	1,923	3,560	2,048	1,183	3,971	4,743
1924–25 ..	2,003	4,066	2,163	1,120	4,166	5,186
1925–26 ..	1,885	4,401	2,105	1,133	3,990	5,534
1926–27 ..	2,126	3,800	1,897	1,221	4,023	5,021
1927–28 ..	2,457	4,427	2,285	1,167	4,742	4,594
1928–29 ..	2,759	4,659	2,115	1,166	4,974	5,825
1929–30 ..	2,688	4,501	2,208	1,263	4,896	5,764
1930–31 ..	2,070	3,228	1,959	1,064	4,029	4,292
Average of the 11 years ending 1920–21	1,372	2,421	908	648	2,284	3,069
Average of the 11 years ending 1913–14	1,635	2,591	853	549	2,488	3,140

The trade history of this presidency in the last decade may be said to fall into three periods, viz., (1) the early period when the effect of the war had not altogether disappeared, (2) the middle period when there was a gradual revival in trade and (3) the last period marked by the world wide depression in trade collapse in commodity prices and political disturbances in the country. In the late Mr. Cotton's report for the previous census it was stated that in March 1921 there was almost complete stagnation of trade with the prospect of dull times ahead for some time to come. In fact 1920–21 was for this presidency more abnormal than any of the war years, consequent on the dramatic collapse of the European exchanges, the depreciation in the value of the rupee as a result of the adverse balance of trade, the accumulation of large stocks bought at high prices by overseas customers and the unfavourable season. In the first year 1921–22 of the decade under review, the reduced purchasing power of the country consequent on the unsatisfactory monsoon of the previous year coupled with the high price of imported goods prevented absorption of the heavy stocks in the market and owing to the increase in the general rate of import duty and imposition of enhanced duties on luxuries, fresh imports received a check. The export trade, although its value rose to some extent failed to come up to general expectations, despite a favourable monsoon, a low rate of exchange and the reduction in steamer freights then introduced. In the next two years the trade of the presidency was passing through a period of recuperation, and although under the stimulus of high prices, the value of the export trade expanded by over 10 crores of rupees, the value of imports declined by over 1½ crores of rupees. The depression in Europe generally restricted the presidency's outlet for produce and in turn diminished her purchasing power. The year 1924–25 witnessed a further expansion in the export trade owing to fairly good crops in that year, the large demand for them as a result of the improved economic conditions in buying countries and the consequential rise in the prices of most of the exported produce whilst a partial revival in the import trade also was in evidence. In the next year the import trade in most articles was depressed despite favourable exchange and the tendency of the fall in prices considerably restricted imports, especially cotton piece goods, the price paid by the consumer being still above the general average before the war. In the case of exports, however, there was satisfactory progress, the prosperity of the rubber and tea industries and the large crops of groundnut and cotton being contributory factors although exports in many staple articles were adversely affected by the depreciation of the franc. Consequent on a marked improvement in the importation of cotton manufactures, sugar, dyes, and colours, machinery and mill work, paper and paste board, there was an expansion in the foreign import trade of the year 1926–27 and the total value of this trade would no doubt have been still higher had the world prices of staple articles such as cotton, sugar and steel remained at the previous year's level, and had not the coal strike in Britain retarded the forward progress of the cotton steel and other industries of that country. On the other hand there was an appreciable decline in the foreign export trade by over 6 crores, chiefly under cotton and groundnuts, owing to the competition resulting from a plentiful supply of cheap American cotton in the case of the former (cotton) and the unsettled state of the continental exchanges, the difficulty of securing freights owing to the coal strike in England, the fall in prices and failure of timely rains in the case of the latter (groundnuts). In the next two years the trade assumed prosperous dimensions, exports and imports in the year 1928–29 in particular having attained a level (4,659 and 2,759 lakhs respectively) never reached previously or subsequently. This was due to a general stability in the financial condition of the world, a stable exchange and a comparatively good supply of freight at reasonable rates. The year 1929–30, however, showed a slight diminution in the foreign trade of the presidency, although even at this reduced level it still exceeded that of any other years previous or subsequent (1928–29 excepted). In the beginning of that year conditions appeared favourable for a steady development in trade

but these hopes were not fulfilled owing to phenomenal financial stringency in the chief money markets of the world brought about by over-speculation and the resultant failures and adverse effects on credit and purchasing power. It was, however, only in the year 1930–31 judging from the trade figures that the effects of the world wide depression made themselves fully felt, and unfortunately for this country, certain additional factors in the shape of political unrest and boycott accentuated further the general economic distress. The Madras Presidency in common with the rest of the world has since been passing through a period of unprecedented economic depression and like all producers of primary products has suffered severely from the fall in prices. Following Great Britain's departure from the gold standard in September 1931 and the linking of the rupee with depreciated sterling. there was an immediate rise in price of all the principal commodities and this afforded a definite stimulus to the export trade. It was thought in some quarters that this improvement was a sign of better times but more cautious observers taking a longer view did not share altogether this spirit of optimism and there has since been a definite retrogression in the situation, practically all commodities having declined in price during the last few months, tanned hides, one of the principal exports of this presidency, having actually declined below the September level. The production of agricultural products seems to have run ahead of demand and the real problem is the correction of over-supply extending over a wide range of commodities. The rise in the value of gold and as a corollary the fall in the prices of commodities have still further accentuated the unfortunate position of the countries engaged in primary production. The general basis of world prosperity undoubtedly lies in a satisfactory level of commodity values whereby the primary producer can earn satisfactory profits but this can only be effected when excess production is overtaken by an increase in consumption and the expansion of consumers' demand which is so greatly to be desired may be expected to be gradual. While it would be folly to overlook or minimise the gravity of the present situation it would be also unwise to exaggerate it for there is no instance in economic history of a crisis that was not followed by a period of stability and prosperity and when the long delayed improvement comes India should be one of the first countries to share in it.

Department of Industries —activities.

Department of Industries.—The outstanding events in the history of the Department of Industries during the last decade were the placing on the Statute Book of the State Aid to Industries Act elsewhere referred to, the conduct of a survey of cottage industries, and the taking up of a survey of the ceramic possibilities of the presidency. In view of the facilities afforded by the State Aid to Industries Act when it became law, the policy of Government in regard to the pioneering of industries underwent some modification and it was laid down that the experimental work of the department should not ordinarily proceed beyond the stage of laboratory test and that pioneer manufacture on a commercial scale should be left mainly, if not entirely, to private enterprise. It was also considered advisable to concentrate the attention of the department on the organization and development of small industries preferably on co-operative lines, particular stress being laid on the importance of village or rural industries with special reference to their suitability as subsidiary occupations during the slack season for the agriculturists who constitute the bulk of the population. As a preliminary to the organization and development of cottage and rural industries a survey of these was initiated and carried out by a Special Officer with some assistants deputed for the purpose. Subsequently a committee was appointed to examine the Special Officer's report and submit proposals for effective organization of such industries as deserved encouragement. The recommendations of the committee could not be given adequate effect to owing to the prevailing financial stringency although it is proposed to give effect to those that are considered feasible as soon as financial conditions improve. Meanwhile the development of the following cottage industries, amongst others, has been assisted in one form or another, the button, bee-keeping, basket, cane and mat, chank, embroidery, handmade paper, metal, palmyra, slate, and toy industries. The ceramic survey was initiated in 1930–31 as a preliminary to the development of the ceramic industry and is still proceeding. The survey includes, besides an investigation of the location and character of the raw materials available for use in the ceramic industry, the extent of the deposits, their commercial value and the facilities available for quarrying and transporting them, an investigation of the present position and potentialities of the tile industry on the West Coast and the problems with which it is confronted. Valuable deposits of china clay and felspar have been discovered, whilst the raw material required for the manufacture of porcelain and other ceramic goods such as stoneware jars, drainage pipes, electric insulators, etc., are also available in the districts so far surveyed. It is hoped that the results of the survey, when published, will be taken advantage of by persons interested in the industry in the presidency and that its development and organization will receive a distinct stimulus. Among the subjects of special investigations, enquiries or experiments carried out by the department in the decennium may be mentioned

(i) Phosphatic nodules in the Trichinopoly district, (ii) (*a*) the indigenous bangle industry and (*b*) the Masulipatam palampore or cotton-printing industry, (iii) improving and developing the lace and embroidery industries. Subsequently a missionary lady

was appointed to carry out a survey of the industry in the presidency and to inquire into the conditions of the industry in the Philippines and other Eastern countries with the products of which the Indian industry has to compete, as also into the possibilities of the market for Indian lace and embroidery in North America and in England and other European countries ; (iv) possibilities of limes and tamarind as a source of citric and tartaric acids ; (v) the alkaline deposits (Psoudu) of the Kistna and Godavari districts and of the manufacture of sodium carbonate therefrom ; (vi) in co-operation with the Agricultural Department manufacturing malted foods from cholam ; (vii) coir extraction, copra and coconut oil extraction and desiccation of coconuts. The possibilities of developing the cement, sugar, vegetable fats and sunnhemp, amongst other industries, have also received attention. Soap is the only product which is now being manufactured by the Department of Industries under commercial conditions although during the decade glue and fluid inks, ink-powders and ink-tablets were also manufactured, whilst the experimental manufacture of printer's ink and lampblack was undertaken. The Kerala Soap Institute has made a net profit over the seventeen years of its existence, although latterly owing to the unfavourable trade conditions and intensive competition of both foreign and Indian-made soaps it has been running at a loss. The Institute also carries out experimental and advisory work and the training of apprentices has been undertaken since 1927 whilst soap manufacture in the presidency has, through its efforts, received a distinct stimulus. There is no statistical information available as to the number of small factories that have sprung into existence in the presidency, as a result, directly or indirectly of the establishment and example of the Kerala Soap Institute, but there is reason to believe that their number is well over 100. Experiments on the refining, deodorization and hydrogenation of oils and fats are now in progress at the Institute and in view of the desirability of encouraging the use of vegetable oils in this country these experiments are of great economic importance. The possibilities of writing-ink manufacture on a commercial basis having been demonstrated, the assets of the ink factory were taken over by a private firm with the intention of continuing manufacturing operations on the basis of the recipes evolved as a result of several years' experimental work at the Government Factory. The object of the Textile branch is to improve the technical side of the handloom industry and to endeavour to improve its organization so as to enable it to meet the highly organized competition of the powerloom. The aim of the department is to assist in the formation of suitable organizations for running power-driven preparatory machinery in conjunction with handloom weavers. Progress in the organization of the industry on the commercial and economic side must necessarily be slow, for the task of producing standardized handmade goods in quantity, of cheapening the cost of producing such goods without reducing the earnings of the weavers, of creating a network of co-operative societies and last but not least of creating a steady and regular demand for the cloths turned out is most difficult. The number of peripatetic weaving parties was reduced during the decennium. Most of the backward weaving centres had been visited and in most of them the general adoption of the commoner type of improved appliances had proceeded so far that further propaganda in this direction was no longer required. The function of the remaining parties has been to introduce the more complicated appliances such as the jacquard, more elaborate dobbies and hand-driven winding, warping and sizing machines and to induce the weavers to take to ready-made sized warps wound on weavers' beams. The dyeing party has demonstrated aerograph printing and improved methods of dyeing in a number of centres. The activities of the department in connection with the sericulture and silk industries are referred to elsewhere. The main object of the pumping and boring operations conducted by the engineering section of the Department of Industries is to render assistance to agriculturists with a view to increasing the agricultural wealth of the country. The general reduction of fees for work done, the option granted to the hirers to transport the machinery themselves and the total remission of fees in the case of unsuccessful boring have all contributed to the increased demand for the facilities afforded by the Engineering Section during the decennium under review. This work consists mainly of the conduct of boring operations, the maintenance of pumping installations and industrial machinery already at work, and the supply, erection and maintenance of pumping plants suitable for irrigation as well as industrial machinery, while loans under the Agriculturists Loans Act are granted on favourable terms to ryots for the installation of pumping plants where there is a reasonable prospect of increased cultivation and a return on the capital expenditure incurred. These facilities have been largely availed of and a total amount of Rs. 5,80,700 distributed to 121 applicants. The boring equipment of the department has been gradually increased and now consists of 21 power drills and 106 hand-boring sets. There has been an increasing demand for borings not only from ryots, but also from local bodies and industrialists. The number of feet bored during the decennium was 318,967. Ten years ago the maximum depth drilled was about 100 feet but now borings carried to a depth of from 500 to 600 feet are not uncommon. The size of the boreholes now ranges from 6″ to 10″ as against 4″ to 6″ formerly, the development of boring practice during the decennium being in the direction of larger and deeper borings. A number of artesian borings have been put down in the last few years and

one at Valayanamadevi, Chidambaram taluk, South Arcot district, is believed to be the most powerful artesian spring yet tapped in India. This borehole yielded a spontaneous and continuous flow of 1,000 gallons per minute three feet above ground level. An important operation carried out during the period was the intensive survey of underground water in a selected area comprising 101 square miles in the Bellary district in order to collect data with a view to ascertaining whether such a survey would be effective in locating underground currents. The experiment has established the fact that it is possible by means of borings to tap underground sources of water even in tracts considered totally unpromising. Valuable data have been compiled which will be of value in future operations in similar localities.

Industrial Education.

Industrial Education.—The demand in India brought about by the war and other causes for industrial products of several kinds created a demand for a higher grade of industrial worker and intensified the need for education to meet the demand. A committee was appointed in 1924 to enquire into the equipment of the presidency in respect of technical and industrial education and to draw up a scheme for an organized system to meet the needs of the presidency at that time and for the reasonably near future. Among the recommendations of the committee, which met with the approval of Government, the most important were that a greater measure of assistance should be rendered to aided industrial schools and that more Government industrial institutions should as funds permit be established in each language area. The aided industrial schools increased in number from 37 on 31st May 1921 to 67 on 31st March 1931 and the number of pupils receiving instruction therein from 1,696 to 5,349. Government Industrial or Trades Schools have also been opened at Calicut, Bellary and Mangalore, the latter being organized on the lines of the Madras School of Technology providing part-time class room instruction in the wood-working and engineering trades for persons employed by local firms ; the schools at Calicut and Bellary provide full-time instruction in mechanical engineering and cabinetmaking, the duration of the courses extending over a period of five years. These schools with the older institution at Madura provide for the needs of the Tamil, West Coast and Ceded districts. Proposals for the institution of similar facilities for the East Coast districts have had to be held over for lack of funds.

The Madras Trades School, originally started in 1916 with 40 students, also developed considerably during the period under review, the number of students increasing from 250 in 1921 to 580 in 1931 and 815 in 1932. This school has been recently renamed 'The Government School of Technology' and the students who satisfactorily complete the courses in Mechanical and Electrical Engineering are now granted diplomas and permitted to style themselves Licentiate in Mechanical Engineering and Licentiate in Electrical Engineering. This change has contributed to the raising of the status of the school and there has been a considerable increase in the number of applications for admission. The branch of this institution conducted in the Madras and Southern Mahratta Railway workshops at Perambur for the benefit of railway apprentices has continued to exert a valuable influence on the training of the better educated youths employed in those workshops. As a branch of the parent institute in Madras, a Preparatory Trades School was established in 1926 to provide industrial establishments with a better prepared type of recruit than had hitherto been available. This school has been very successful and proposals for making it permanent are now under consideration. A noteworthy aspect of the development of these Government and aided industrial and technical institutions is the changed outlook of educated Indians towards industrial work. All communities have taken to industrial education in increasing numbers, but Brahmans and Non-Brahman Hindus have done so proportionately in much greater numbers than other communities. This is particularly noticeable in the case of the students in the Government School of Technology which cater for a type of student with a higher general education. Between 1920–21 and 1930–31 the strength increased by 130 per cent ; the corresponding increase in the case of different communities was as follows :—

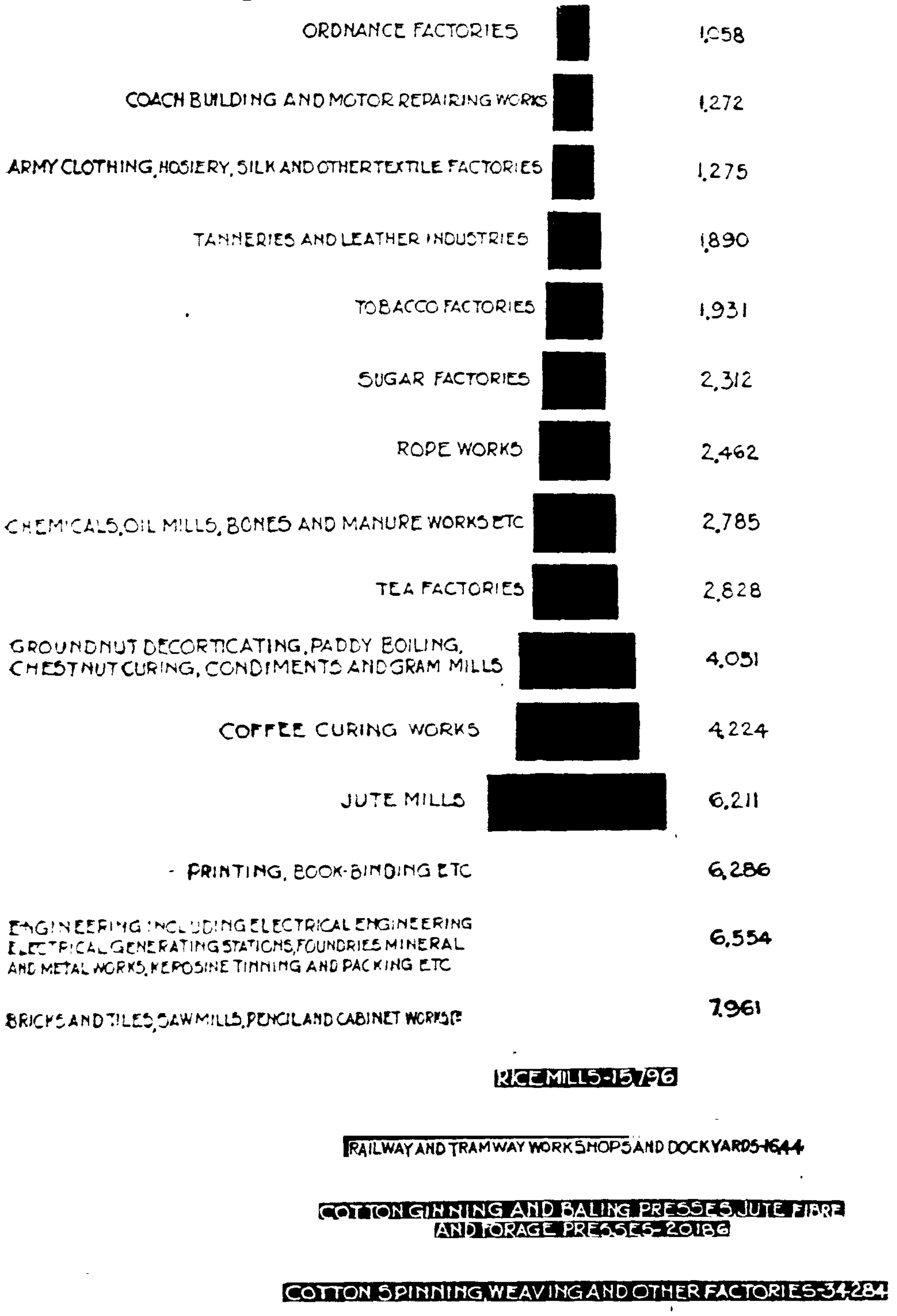
	Percentage.		Percentage.
Brahmans	310	Christians	100
Non-Brahman Hindus ..	162	Muhammadans ..	Nil.

The School of Arts and Crafts, Madras, which had been transferred to the Department of Industries in October 1920 was reorganized during the period under review. A committee which went into the question of reorganization of the school in 1929 recommended the separation of the Fine Art classes from the Crafts section of the existing school and their constitution into a separate school of Fine Arts. Government, however, directed that both Fine Arts and Industrial Arts or Crafts should continue to be taught in the existing school and there are now two sections one devoted to Fine Arts and the other to Crafts both of which are developing satisfactorily. Enamelling on gold and silver has been started amongst the students of the goldsmiths' section. In lacquer work new methods have been taught and in the cotton printing section actual printing by means of blocks has been started with a view to displacing the costly waxing process.

The Leather Trades Institute at Washermanpet was established in 1915 for the purpose of improving the methods of manufacturing leather in India, and providing a course of training in tanning and leather manufacture. From 1923, however, the number of students under training progressively declined and the instructional side of the Institute was closed in 1928. The Institute now functions as a centre for the provision of general advice, research and practical guidance to tanners and for the conduct of analyses for the tanning trade.

With a view to providing instruction on up-to-date lines in the manufacture of cotton, silk, wool, coir, etc., the Government Textile Institute was started in 1922. Originally started in a rented building with a few students, it has gradually developed into a large and flourishing institution with a separate building of its own and fitted with gas, steam and other facilities, the average number of students enrolled annually being about 60. The Institute is divided into the following sections : (i) cotton warp and weft preparation, (ii) wool preparation, (iii) silk preparation, (iv) textile testing, (v) weaving, (vi) hosiery, (vii) pile carpet weaving, (viii) textile chemistry and dyeing. The Institution provides two courses of instruction, the Supervisor's course extending over a period of two years and the Artisan course which is restricted to one year. The training afforded to artisans is almost entirely of a practical character and is intended to turn out competent craftsmen. The Supervisor's course is a higher course designed to train students who in addition to being craftsmen will be able to assist in the organization of the industry.

Relative Importance of the different Classes of Factories in Madras during 1931.



Factories.—At the close of 1920 there were 511 factories coming under the operations of the Indian Factories Act of which 332 were perennial and 179 seasonal. The average number of operatives employed daily in the 511 factories was 101,655. By the close of 1930, the number of factories had increased threefold to 1,661 and these were made up of 1,223 permanent and 438 seasonal factories. The number actually in commission was 1,527 the remaining 134 having been closed for various reasons. One hundred and sixty-six of the perennial and 319 of the seasonal, i.e., about 30 per cent of the total number were connected with the cotton industry while industries of food, drink and tobacco accounted for 769 factories. The average daily number of operatives employed daily (i.e., in the 1,527 factories) increased within the ten years period to over 142,000, i.e., by about 40 per cent. The diagram shows the distribution of the operatives in the different classes of factories and their relative importance at the close of the year 1930. The number of women employed in factories has steadily increased from 17,523 in 1920 to about 35,000, i.e., by nearly 100 per cent. The number of boys and girls employed has shown a decline, though not a gradual one, by over 1,000 in the former case and by nearly 800 in the latter, their strength in 1930 being 4,269 and 2,036 respectively. It will thus be seen that out of a total of 142,000 operatives, male operatives account for about 100,000, i.e., 70 per cent, while women account for less than 25 per cent. The following are the chief classes of factories that have shown an increase during the decade :—

Factories.

	From	To
(1) Government and local fund factories	17	30
(2) Textiles	23	45
(3) Minerals and metals	7	21
(4) Food, drink and tobacco ..	178	769
(*a*) Rice mills	149	463
(*b*) Groundnut decorticating factories	2	194
(*c*) Tea factories	Nil	74
(5) Chemicals, dyes, etc. ..	8	37
(6) Paper and printing	29	59
(7) Tile factories	37	57
(8) Processes relating to wood, stone, glass, etc.	42	72
(9) Processes connected with hides and skins	5	14
(10) Jute presses and cotton ginning and baling presses.	159	395
(11) Engineering, including Railway and Tramway workshops, kerosene tinning and packing, coach building and motor repairing, etc. ..	35	67

The increase of 40,000 operatives is mainly accounted for by the following :—

(*a*) Textile industries by over ..	11,000
(*b*) Food industries by over ..	16,000
(*c*) Tile factories by over	2,000
(*d*) Cotton ginning and baling presses	6,000
(*e*) Bone mills, oil mills, etc. ..	1,500

Notable decreases are shown under sugar factories from 3,837 in 1918 to 2,312 in 1930 and under Government and Local Fund factories from 8,081 in 1918 to 6,315 in 1930. The number of sugar factories has decreased from 9 in 1920 to 5 in 1930 although this tendency may well be reversed in the next decade as a result of the substantial tariff production afforded to the sugar industry.

Power employed.—On 1st January 1931 there were 1,661 registered factories in the presidency using steam, oil, gas, water or electricity as shown in the accompanying statement, against 1,466 in 1921. The number of establishments using the different kinds of power and the number of engines or motors employed in them are given below :—

	Number of establishments.	Number of engines or motors.
Steam	746	798
Oil	731	796
Water	10	11
Gas	119	129
Electricity ..	117	511

The total horse-power generated is compared below with the figures of 1911 and 1921 but it should be noted that the figures for 1931 have been given only as far as they are available:—

	1911.	1921.	1931.	Increase or decrease over 1921.
Steam	26,101	35,733	33,195½	— 2,537½
Oil	8,939	12,430	30,199½	+ 17,769½
Gas	..	5,647	7,938	+ 2,291
Water	1,763	3,519	1,766	— 1,753
Electricity	286	10,500	30,000	+ 19,500
Total ..	*37,089*	*67,829*	*103,099*	+ *35,270*

It will be seen that the total horse-power generated has increased by 35,270, steam engines have shown a reduction by about 2,500, whereas internal combustion engines using oil and gas, particularly the former, are becoming increasingly popular. The power derived from oil engines has increased by about 17,700, i.e., by nearly 150 per cent while that of gas engines has increased by about 40 per cent. Water power has receded to the level of 1911. The total horse-power of electricity self-generated or installed in 354 factories and 100 cinemas, in 1931 was 30,000 representing a large increase over the figure of 1921. These figures do not fully represent the power employed in the presidency as they

do not include the numerous smaller concerns, mostly driven by oil engines which do not come within the scope of the Factories Act and there are no means of ascertaining these figures without employing a special staff for carrying out a census of power plants.

Electricity.—The subjoined statement gives the names of the towns in which there is a public electric supply and the total units generated during the decade :—

Madras Presidency Licences.

Year.	Towns with electric supply.	Total units generated.
1921	Madras	10,915,799
1922	Madras	11,981,082
1923–24	Madras and Ootacamund	14,385,171
1924–25	Above with Devakottai and Kanadukathan	15,486,722
1925–26	Do. Cochin	16,309,498
1926–27	Do. Bellary	17,245,304
1927–28	Do. Trichinopoly	20,766,270
1928–29	Do. Madura, Calicut and Rajahmundry	24,271,853
1929–30	Above (with the exception of Ootacamund) with Cocanada, Tanjore and Hindupur	26,397,615
1930–31	Above with Kurnool, Kanadukathan and Bezwada	29,445,486 (approximate).

Between 1921 and 1932 the undernoted municipal or company electricity undertakings came into existence :—

Ootacamund.	Trichinopoly.	Coonoor.	Conjeeveram.
Kanadukathan.	Madura.	Hindupur.	Vellore.
Devakottai.	Rajahmundry.	Sembiam.	Salem.
Coimbatore.	Calicut.	Kurnool.	Kumbakonam.
Cochin.	Cocanada.	Karaikudi.	Guntur.
Bellary.	Tanjore.	Bezwada.	Tirupati.

It will be seen that there has been a steady increase in the number of towns that have taken to electricity, and in the number of units generated which latter has nearly trebled within the decade. About a dozen more towns are now investigating schemes for electrification and with the completion of the Pykara and other hydro-electric projects which will offer facilities for the wide distribution of electrical energy, it may be anticipated that a considerable area of the Madras Presidency, especially the south-western portion, will gradually come to be supplied with electric power for lighting, industrial and other purposes.

Part II.

The following notes on the principal industries of the presidency are intended to supplement the general information given in the first part of the chapter.

Cashew. *Cashewnut industry.*—The production of cashewnut kernels is an important industry on the west and east coasts, particularly the former, Mangalore being the chief centre. The production of the raw nuts in South Kanara is estimated at about 70,000 to 80,000 bags of 140 lbs. each while an equal quantity is produced in the adjacent parts of Malabar, Cochin and Travancore some of which is imported into Mangalore. The East Coast districts account for 50,000 bags, while Goa and the coastal tracts of the Bombay Presidency probably account for 110,000 bags. The total production in India of cashewnuts is therefore about 300,000 bags. As the present requirements of the industry in Mangalore alone are stated to be about 200,000 to 300,000 bags, the deficiency is made good by the importation of African nuts which come into the Mangalore market from December to April, i.e., when the Indian crop is exhausted, and thus serve to keep the factories going throughout the year. There are five or six factories in Mangalore engaged in this industry which provides employment for about 4,000 persons, mostly women, and the annual wage bill amounts to about 4½ lakhs of rupees. This industry has shown marked development during the decade as will be seen from the table below which shows the total exports of cashew kernels for the past ten years :—

Exports of Cashew Kernels from Mangalore Port.

Year.	Quantity. CWT.	Year.	Quantity. CWT.	Year.	Quantity. CWT.	Year.	Quantity. CWT.
1922	10,637	1925	16,671	1928	26,063	1931	37,663
1923	8,735	1926	13,533	1929	26,432		
1924	9,586	1927	19,546	1930	30,733		

The above figures do not, however, represent the total production of cashewnut kernels in Mangalore, since during the south-west monsoon when the port of Mangalore is closed, a considerable quantity of cashew kernels is railed to Cochin and other ports for shipment.

Coconut. *Coconut industries.*—The expression "Coconuts, the consols of the East" aptly indicates the value placed on the products of the coconut palm and the part these play in the economic life of the people in several parts of South India, Ceylon, etc., for there is or

was no essential requirement of the people which some part of it cannot or could not supply. Apart from the several uses of the chief products, viz., coir, copra, coconut oil and oil cake, the hollowed trunk serves as a canoe, the nut forms a staple article of diet and a very wholesome one, the leaves may be used for many of the purposes of paper, are frequently employed as thatch and for the manufacture of brooms, baskets, umbrellas, tattis and fans and utilized as crude torches in a dried form or burnt as fuel or for manure. The shell also is used as fuel either as it is or in the form of charcoal. The fresh or fermented juice of the stem is consumed as a beverage ; by evaporation it is made into jaggery and by subsequent treatment refined sugar is even obtainable. When distilled, the toddy becomes spirit or arrack and finally vinegar. The jaggery is not infrequently mixed with lime to make a strong cement which takes a fine polish and so on.

The area under coconuts in the presidency has averaged over 550,000 acres during the last ten years—vide statement of acreage given below :—

Year.	ACS.	Year.	ACS.	Year.	ACS.
1921–22 ..	.. 559,404	1925–26 ..	.. 555,465	1929–30..	.. 576,083 *highest.*
1922–23 ..	.. 543,263	1926–27 ..	.. 552,815	1930–31..	.. 565,971
1923–24 ..	.. 520,552 *lowest.*	1927–28 ..	.. 557,102		
1924–25 ..	.. 525,445	1928–29 ..	.. 570,330		

Malabar, South Kanara, East Godavari and Tanjore are in the order of importance, the chief districts growing coconuts.

Coir.—During 1911–21 the pride of place among coconut products exported was held by copra, but in 1921–31 the first position has been taken by coir and coir products. Table I shows the exports of coir (unmanufactured) during the last ten years. Coastwise exports have been negligible. Table II shows the exports of coir (manufactured). **Coir.**

TABLE I.

Coir (unmanufactured)—Foreign Trade.

Year.	Quantity. TONS.	Value. RS.	Year.	Quantity. TONS.	Value. RS.	Year.	Quantity. TONS.	Value. RS.
1922–23 ..	460	1,11,816	1925–26 ..	397	1,09,141	1928–29 ..	334	1,02,327
1923–24 ..	368	87,481	1926–27 ..	245	75,290	1929–30 ..	220	75,147
1924–25 ..	340	84,481	1927–28 ..	194	57,088	1930–31 ..	190	60,004

TABLE II.

Exports of Coir (manufactured) excluding Cordage and Rope.

	Foreign.		Coastwise.			Foreign.		Coastwise.	
Year.	Quantity. TONS.	Value. RS.	Quantity. TONS.	Value. RS.	Year.	Quantity. TONS.	Value. RS.	Quantity. TONS.	Value. RS.
1921–22 ..	27,208	90,14,937	15,378	31,20,360	1926–27 ..	27,655	97,99,076	13,023	28,85,819
1922–23 ..	32,575	1,07,41,614	13,478	26,16,890	1927–28 ..	33,069	1,11,56,924	13,538	28,82,385
1923–24 ..	31,163	1,00,88,531	15,151	30,26,385	1928–29 ..	31,767	1,63,97,287	13,533	29,32,065
1924–25 ..	36,286	1,20,25,754	13,002	25,46,793	1929–30 ..	31,176	1,02,54,195	..	..
1925–26 ..	29,561	1,05,83,341	13,875	31,37,894	1930–31 ..	25,862	87·13 lakhs.		

The United Kingdom and Belgium are the chief importers of coir (unmanufactured) while manufactured coir is chiefly taken by Germany, the United Kingdom, Netherlands, Belgium, France, Italy and the United States of America. It will be seen that foreign exports alone of manufactured coir have exceeded Rs. 1 crore in value, except in three years, while the value of coastwise exports has always been over 25 lakhs. Cochin and Calicut are the principal ports of shipment, the former accounting for about 80 per cent and the latter for almost the entire balance. Foreign and coastwise exports of coir rope and cordage have averaged about 10 lakhs of rupees in value, cordage preponderating.

Copra.—The foreign exports of copra which amounted in 1913–14 to about 38,100 tons valued at over one and a half crores of rupees came down to 13 cwt. valued at Rs. 242 in 1918–19, although in the next year, there was a slight revival, 7,344 tons being exported. The exports again declined to 2,582 tons in the next year and rose to 2,762 and 13,856 tons in the years 1921–22 and 1922–23. They receded again gradually to one ton in 1925–26 and after going up to over 2,000 tons in the next year, again shrank to about 50 lbs. in 1928–29. In 1929–30, only one ton was exported and in 1930–31 none. This commodity affords an important instance of the effect the war has had on the export trade of the presidency. Immediately before the war, Germany alone took about one crore worth of copra accounting for about 63 per cent of the total quantity exported to foreign countries (1912–13 Germany took over 80 per cent of the exports) and now within 17 years the total exports have dwindled almost to nothing. On the other hand, the coastwise exports of copra subsequent to 1913–14 have shown a marked increase, although this improvement cannot adequately offset the huge loss in the foreign export trade. If the same quantity of copra is produced now as **Copra.**

formerly, a larger portion of the output must be going into consumption in the country itself, in the form of food as well as for crushing purposes. Madras copra has, to a large extent, maintained its superior quality, but as it is not kiln-dried as in Ceylon, there is a lack of uniformity in the quality. It commands, however, a good price, probably because it is largely sun-dried and on account of its reputed higher oil content.

Value of Exports of Copra (Foreign and Coastwise).

Year.	In lakhs of rupees.	Year.	In lakhs of rupees.	Year.	In lakhs of rupees.	Year.	In lakhs of rupees.
1913–14	.. 25·31	1918–19	.. 64·58	1923–24	.. 64·72	1928–29	.. 57·11
1914–15	.. 22·95	1919–20	.. 62·81	1924–25	.. 65·40	1929–30	.. ..
1915–16	.. 30·37	1920–21	.. 54·17	1925–26	.. 63·10	1930–31	.. ..
1916–17	.. 36·08	1921–22	.. 73·51	1926–27	.. 87·46		
1917–18	.. 43·78	1922–23	.. 70·79	1927–28	.. 56·65		

Coffee.

Coffee.—The production of coffee in India is confined to Mysore, Madras, Coorg, Cochin and Travancore in the order of importance, the Madras share being less than one-fourth of the total. The following statement shows the production and export of coffee in this presidency during the decade:—

Production and Export of Coffee.

Year.	ACRES.	Production of cured coffee. LBS.	Export. CWT.	Value of exports. RS. (LAKHS).	Year.	ACRES.	Production of cured coffee. LBS.	Export. CWT.	Value of exports. RS. (LAKHS).
1921–22 ..	25,655	5.163.158	219,153	129·86	1926–27 ..	37,173	6,914.970	145,244	128·48
1922–23 ..	27.452	7.642.406	162,045	119·63	1927–28 ..	38,159	11,533.164	270,495	226·88
1923–24 ..	33.487	3.598.396	208.885	152·59	1928–29 ..	38,104	4,827,302	193,432	165·77
1924–25 ..	34.235	9,669.289	235.135	202·62	1929–30 ..	37,583	8,068,408	179,730	141·87
1925–26 ..	35,430	4.525.736	196,538	178·22	1930–31 ..	38,377	..	287,414	188·35

The area has increased by about 50 per cent within the last 10 years. The production also has increased, the output during the first five years of the decade being slightly less than that for the next four years. The Nilgiris, Salem, Madura, Malabar and Coimbatore are the important coffee growing districts. The exports in 1930-31 were the highest in quantity but the pride of place in regard to the value of coffee exported belongs to 1927–28 in which year, the value was higher by 38 lakhs although the quantity was less by 17,000 cwt. The United Kingdom and France are the most important customers, Germany, Netherlands, Norway, Belgium, Iraq, Bahrein Islands, etc., taking smaller quantities. This trade also has suffered greatly during the last few years of the decade owing to the trade depression, a heavy fall in the price having occurred owing to the inability of Brazil to maintain its valorization scheme in the face of economic causes. Recently prices have improved and the demand for Indian consumption appears to be steadily increasing, thereby to some extent making the Indian producer independent of outside markets. There are indications that owing to the great depression in rubber, there will be a very large increase in future in the planting of Robusta coffee which, it has been shown, will thrive in most districts where rubber is now produced and this is likely to increase considerably the quantity of coffee produced in India.

Cotton.

Cotton.—It will be seen from the following statement which shows the area on which cotton was grown during the last ten years, with the weight and value of the cotton exported, that the value of the export trade has undergone considerable fluctuations during the period :—

Year.	Area under cultivation. ACS.	Exports of raw cotton.		Year.	Area under cultivation. ACS.	Export of raw cotton.	
		Quantity. TONS.	Value. RS.			Quantity. TONS.	Value. RS.
1921–22 ..	1.782.981	17.807	1,87.80.048	1926–27 ..	2.203,688	27,693	3,07,58,119
1922–23 ..	2.322.928	17.098	2,49,92.384	1927–28 ..	2,099,718	22,668	2,44,89,351
1923–24 ..	2.631.621	26,500	5,86,05,811	1928–29 ..	2,464,775	29,074	3,31,03,505
1924–25 ..	2.903.488	37,722	6,73,68.368	1929–30 ..	2,476,663	41,122	4,52,43,773
1925–26 ..	2.920.743	56,662	7,92.10,359	1930–31 ..	2,041,284	21,167	1,63,96,260

Varieties of cotton.—In the Madras Presidency, the cultivation of cotton is largely carried on in the districts of Tinnevelly, Ramnad, Madura, Coimbatore, Trichinopoly, Salem, Cuddapah, Anantapur, Bellary, Nellore, Kurnool, Guntur, Kistna, Godavari and Vizagapatam. The trade names of the several varieties grown are 'Cambodias" 'Tinnevellies,' 'Salems,' 'Northerns and Westerns' and 'Cocanadas'. 'Cambodias, are grown in Trichinopoly and portions of Coimbatore and Madura ; 'Tinnevellies' in Tinnevelly, Ramnad and portions of Madura ; 'Salems' (Uppam) in Salem and portions of Coimbatore ; 'Northerns and Westerns' in Bellary, Kurnool, Anantapur, Cuddapah and

Chittoor, and 'Cocanadas' in Kistna and Guntur. Of the Southern India cottons, 'Tinnevellies' are well suited for the production of 40s counts and below, whilst others are suitable for 24s counts and below. The Northern staple is $\frac{7}{8}$″, the Eastern $\frac{3}{4}$″, the Cocanada $\frac{5}{8}$″ to $\frac{7}{8}$″. the Karunganni $\frac{7}{8}$″. the Tinnevelly $\frac{3}{4}$″ and $\frac{7}{8}$″ and the Salem $\frac{3}{4}$″.

There are about 2,500,000 acres of land normally under cotton cultivation in the presidency, and the normal annual yield is about 500,000 bales of 400 lb. each.

Cotton Ginning.—According to the census returns, there were 28,905 persons engaged in cotton ginning, cleaning and pressing in 1931 while the corresponding figure for 1921 was 20,844 representing an increase of about 40 per cent. The number of ginning factories and presses in the Madras Presidency coming under the Factories Act was 424 in 1931 against 205 in 1921.

Hand-spinning.—The industry of hand-spinning is as old as the Vedas and has been in existence from time immemorial. Hand-spinning is still largely carried on in the coir, wool, and silk industries. As regards cotton, however, when cheap and superior mill-made yarns were placed on the market, the handloom weavers gradually abandoned the use of hand-spun yarn. Hand-spinning of cotton then ceased to be a remunerative occupation and consequently fell into desuetude. In the last decade, however, there has been a partial revival of the cotton hand-spinning industry, and it is estimated by the All-India Spinners' Association that in 1930–31, khadi was produced in the Madras presidency (Andhradesa, Tamilnad and Keraladesa) to the value of Rs. 31,68,302 out of a production for the whole of India valued at Rs. 57,81,952. Taking 6 annas per yard as the average cost price or $2\frac{2}{3}$ yards per rupee, the production of khadi in this presidency will amount to 8,448,800 yards. The industry of hand-spinning is now carried on chiefly in the districts of Cuddapah, Kurnool, Anantapur, Ramnad, Madura, Tinnevelly, South Kanara, Salem, Guntur, Tanjore, South Arcot, Chittoor, Kistna, West Godavari, East Godavari, Coimbatore, Nellore, Vizagapatam and Ganjam. Generally in the Ceded Districts and Northern Circars the industry is more developed than in the Southern districts.

Cotton spinning and weaving mills.—The average annual imports of Madras during the last few years have been 7 million pounds of yarn and 70 million yards of cotton piecegoods, and there can be no question that having regard to the quantity of cotton available in the province and the market for yarn and piecegoods in it, there is considerable scope for the setting up of additional spinning and weaving mills. The following table shows the progress made by the mill industry since 1901 :—

Statement showing the Progress of the Cotton Spinning and Weaving Mill Industry.

Year.	Number of mills.	Number of looms.	Number of spindles.	Number of hands employed daily.
1901	11	288,000	1,735	12,600
1909	12	339,510	2,023	18,860
1919	15	423,232	2,727	24,118
1929	23	775,928	5,233	32,866
1930	..	..	..	..
1931	25	..	5,493	..

The following table shows the production in pounds and counts of yarn of the spinning mills in the presidency :—

Production of Cotton Yarn by the spinning mills in the Madras Presidency.

Counts or number of yarn.	1927–28.	1928–29.	1929–30.
	LB.	LB.	LB.
1–10	3,528,063	3,632,100	3,844,152
11–20	29,814,977	27,631,247	28,841,917
21–30	30,461,447	30,164,608	34,427,844
31–40	4,158,523	6,201,372	5,791,266
Above 40	27,348	105,986	300,793
Waste yarn	757,536	1,301,030	1,296,442
Total of all yarn made in Madras mills	***68,747,894***	***69,036,343***	***74,502,414***

In the table below will be found particulars of the production of woven goods in pounds in the mills of the presidency :—

Production of Woven Goods by the mills in the Madras Presidency.

Description.	1927–28.	1928–29.	1929–30.
	LB.	LB.	LB.
Grey and bleached piecegoods.	7,304,442	6,869,960	7,843,148
Coloured piecegoods	10,960,516	11,222,796	10,728,797
Grey and coloured	474,757	465,544	557,418
Hosiery	95,977	238,900	471,645
Miscellaneous	16,991	9,428	7,205
Cotton mixed with silk or wool.	1,097,452	825,680	1,105,957
Grand total in lb.	***19,949,135***	***19,632,308***	***20,714,170***
Total in yards	***59,964,330***	***60,021,325***	***64,054,279***
Hosiery in dozen pairs	152,518	195,131	270,474

1 lb. is approximately equal to 4·25 yards on an average.

29

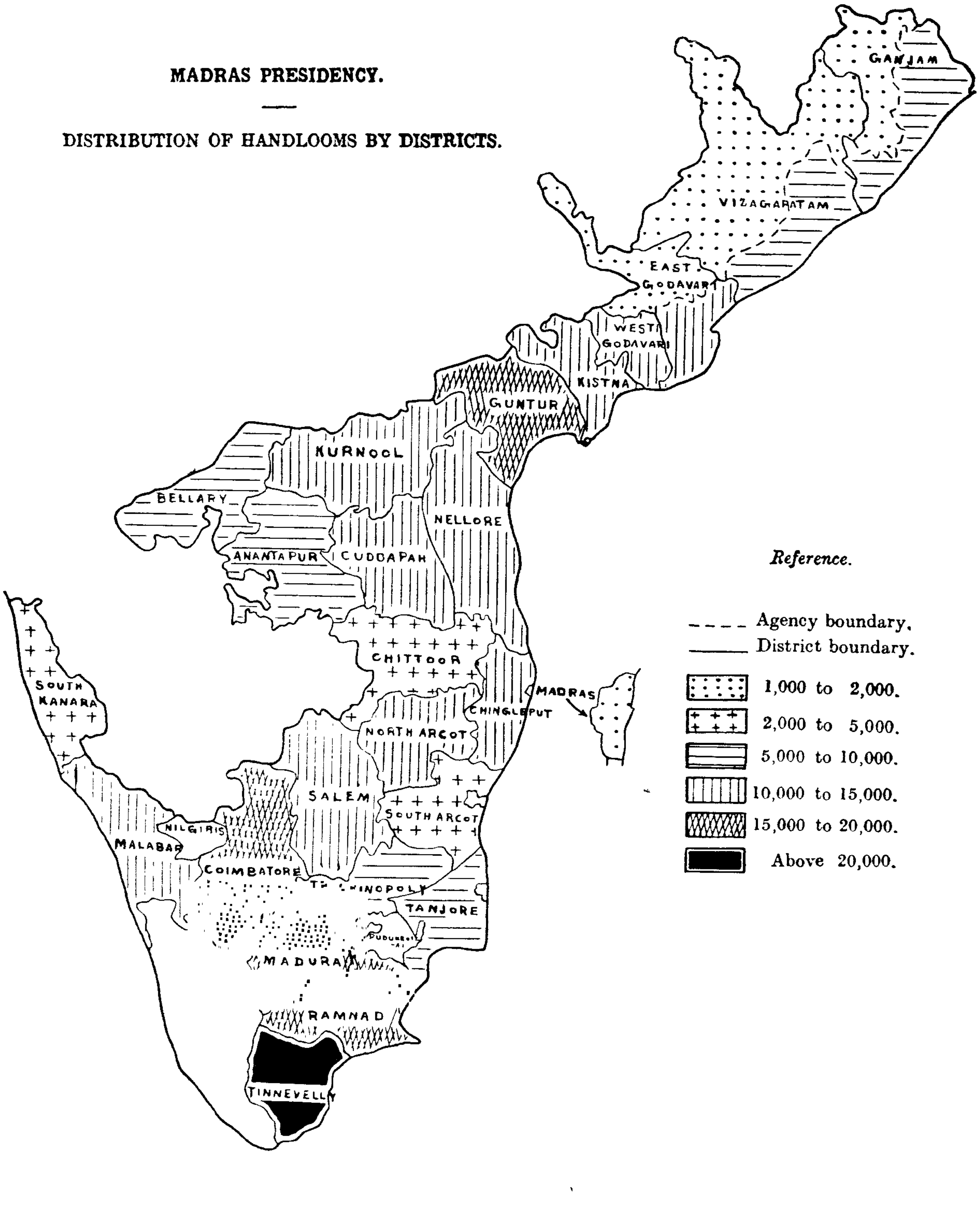
Cotton spinning and weaving, in common with most other industries, have been passing through a difficult time during the last two or three years owing to the severe fall in commodity prices and consequent reduction in the purchasing power of consumers, as also to the lack of confidence accentuated by the political situation and the fall in cotton values. Competition has been very keen and although output was maintained prices were unremunerative. A tendency has been apparent on the part of cotton mills to offset the narrow margin of profit obtainable by increasing the number of spindles or looms as the case may be, by replacing old by modern machinery, and by adopting the most efficient power drive possible.

Handlooms.

Handloom weaving.—The textile cotton industry of the Madras Presidency affords a means of subsistence to a large number of people, and ranks in importance and magnitude next only to agriculture. Except the Nilgiris, all the other districts of the presidency are handloom weaving areas. Fourteen districts contain, according to the Special Officer for the Survey of Cottage Industries, more than 10,000 looms each. The various classes of people engaged in the industry from time immemorial are Devangas, Sourashtras, Kaikolans, and Padmasalis, and also the depressed classes, and the industry provides work for men, women and children. The importance of the industry to this presidency can be gathered from the fact that although there were only 169,451 looms in the Madras Presidency in 1921 out of a total of nearly two million looms in the whole of India, the consumption of yarn

MADRAS PRESIDENCY.

DISTRIBUTION OF HANDLOOMS BY DISTRICTS.



in this province by handloom weavers was only a little less than one quarter of that of the whole of India in the decade ending with the year 1920–21, while in this period the quantity of cloth produced on handlooms was nearly five times as much as that produced by the power looms in the Madras Presidency. From the standpoint of the wellbeing of the rural population also there is no doubt that the handloom weaving industry of the presidency plays a conspicuous part as there is no other occupation so remunerative as weaving to absorb the population not engaged in agriculture or to keep agriculturists occupied during the slack season. It serves also as a suitable part time occupation for the families of agriculturists and the depressed classes. Handloom weavers produce cloths from yarns of counts ranging from 12s to 200s, the principal classes of goods turned out on the handlooms being coarse and fine dhoties, grey and coloured sarees, turban cloths, angavastrams, Madras handkerchiefs, lungis and kailies, grey and coloured shirtings, coatings, bed sheets and towels. The number of persons shown as following the occupation of cotton spinning, sizing and weaving in the recent census was 486,248. In the last census report, the population supported by the industry was shown as 687,083 not including the number of 'weavers unspecified' amounting to 224,818. On the assumption that each weaver supports two others, the number of persons engaged in the industry was put in 1921 at rather less than 304,000. If this basis of calculation is correct it is evident that the number of weavers has, since 1921, increased by about 60 per cent. The quantity of yarn consumed on the handlooms appears also, as will be shown later, to have kept pace with the apparent increase in the weaver population. In 1924, when the Statistical Atlas of the presidency was prepared and published the number of handlooms had increased in certain districts, for example, in Cuddapah by over 7,000, in Bellary by over 4,500, in Tanjore by over 8,500, in Trichinopoly by over 5,000, in Coimbatore by over 10,000, in South Kanara by over 1,800, and in Malabar by over 2,500. According to the Special Officer for the Survey of Cottage Industries, the number of looms in the several districts of the presidency had increased to 259,451 by the year 1928; for instance, in Madras, the increase was estimated at nearly 9,000, in Kurnool at 6,000, in Anantapur at 1,200, in Ramnad at over 12,000, in Malabar at 4,100, in East and West Godavari at nearly 8,000 (over the figure for the former Godavari district), in Coimbatore at about 5,000 and in North Arcot at nearly 1,300. A map of the presidency showing the distribution of looms in the several districts is given above. If the Special Officer's figures are correct the total number of looms has increased by about 90,000 (53 per cent), whereas the census of 1931 has revealed an increase of only about 15 per cent to 193,474. The census figures, however, appear to be an underestimate of the position. Although definite statistics are lacking, there appears to be no doubt that the consumption of yarn by handlooms in the presidency has increased to a not inconsiderable extent. In the decade ending with the year 1921, the average consumption of yarn by handlooms in the presidency was 59 million lb. against a consumption of 244 million lb. for the whole of India. It is not possible to estimate with any degree of accuracy the consumption of yarn in the presidency subsequently as the compilation of railborne statistics has been stopped since that year. Assuming, however, that the proportion that existed in the decade ending with the year 1920–21, i.e., 59,244 or nearly 25 per cent, exists now—and there is no reason why this proportion should not have been, in view of the increased use made of Indian yarn, maintained or even perhaps improved—it should be possible to arrive at an estimate of the consumption of yarn in this presidency. Consumption in the whole of India had during the first half of the decade ending with 1930–31, increased from 244 million lb. in the decade ending with 1920–21, to about 300 million lb. on an average, and to about 325 million lb. on an average in the second half of the decade. The proportion accounted for by Madras would, on the basis of the proportion existing in the previous decade, give a consumption of $\frac{300 + 326}{2} \times \frac{59}{244} = 75{\cdot}5$ million rupees, or an increase of over 16·5 million rupees over the average consumption in the previous decade. The following statement exhibits the quantity of yarn imported and exported from the presidency together with the quantity available for consumption outside the mills.

Imports into the Presidency—

	Average for 1919–20 and 1920–21. LB.	Average for 1927–28 and 1928–29 LB.
1. Seaborne traffic ..	5,056,500	8,516,500
2. Coastal traffic Indian.	3,083,500	3,469,500
3. Coastal traffic Foreign.	206,000	2,854,800
4. Railborne traffic Indian.	48,657,500	..
5. Railborne traffic Foreign.	4,826,500	..
6. Yarn produced in the Presidency.	42,793,500	68,898,100
7. Total imported and produced.	***104,623,500***	***83,732,900***

Exports—

	Average for 1919–20 and 1920–21.	Average for 1927–28 and 1928–29.
	LB.	LB.
1. Seaborne traffic Indian.	4.405.600	448.600
2. Seaborne traffic Foreign.	8.000	1.200
3. Coastal traffic Indian.	1,202.000	13,177,100
4. Coastal traffic Foreign.	133.500	239,900
5. Railborne traffic Indian.	28.973.000	..
6. Railborne traffic Foreign.	3.499,500	..
7. Weight of goods woven in the presidency.	13,642.000	19,790,727
= in yarn in lb. ..	12.180.500	17.670,300
8. Total yarn consumed and exported.	**50,403.000**	**31,537,100**
9. Balance available for consumption outside the mills, i.e., by handloom weavers.	54,220,500	*52,195,800

* This figure has been arrived at without taking into account the railborne imports of Indian and foreign yarn into the Madras presidency amounting in 1919–20 and 1920–21 to 53 million lb. on an average, set off by exports by rail of foreign and Indian yarn amounting in that period to 32 million lb. (average). This left in the period 1919–20 and 1920–21 a balance of about 21 million lb. (average) of railborne yarn which went into consumption in the presidency. If the same quantity is taken as the balance of railborne imports into the presidency after allowing for exports, the average of 52.197.000 lb. would be increased by 21 million lb., i.e., the total consumption of the yarn by handlooms in the Madras Presidency would in the case of the years 1927–28 and 1928–29 have been about 83 million lb. against a consumption of 54 million lb. each. in 1919–20 and 1920–21. It is convenient to take the years 1927–28 and 1928–29, as the succeeding years were years of abnormal economic depression.

Whatever basis is taken for computing the quantity of yarn consumed by handloom weavers in this presidency, it seems clear that there has been a considerable increase in the consumption during the last ten years, and that this increase has more or less kept pace with the increase in the number of persons engaged in the industry and also the number of looms employed by it as reported by the Special Officer. During the last few years, the handloom weaver has taken increasingly to the use of artificial silk yarn as weft, and also as warp in the weaving of borders in sarees and dhoties, the annual imports of artificial silk yarn into the presidency by sea during the last three years having exceeded two million pounds. The number of looms engaged in the weaving of artificial silk fabrics is according to the census 17,693.

Madras handkerchiefs and kailies.—The manufacture of Madras handkerchiefs and kailies, which forms a special line of coloured hand-woven fabric and which command a large sale outside India, constitutes a very important section of the cotton handloom weaving industry employing 40,000 looms and affording a means of support to a large number of handloom weavers of the presidency. The following statement shows the exports of Madras handkerchiefs, lungis and kailies during the last ten years :—

Year.	Madras handkerchiefs.		Lungis and kailies.	
	Quantity.	Value.	Quantity.	Value.
	YARDS.	RS.	YARDS.	RS.
1922-23	1,792,440	22,15,769	25,029,080	1,61,23,737
1923-24	2,642,107	32,98,372	35,245,959	2,12,44,522
1924-25	..	..	22,541,032	..
1925-26	..	..	31,531,801	1.73,60,992
1926-27	1.352,199	15,06,318	25,899,973	1.72,57,887
1927-28	3,297,551	35,06.697	26,122,914	1,40,61,929
1928-29	3,008,780	28,24,664	25,717,587	1,34,27,804
1929-30	4,785,914	43,52,417	19,202,916	1,35,70,337
1930-31	2,607,299	21,42,105	..	97,62,842
1931-32	3,350,338	22,57,240	15,148,495	75,88,806

The Madras handkerchief trade has latterly suffered from the general world depression and the reduced purchasing power of the consuming countries, and in order to compensate for the low price offering, the weavers are reported to have taken to producing inferior goods by using inferior yarn and dyes, in reducing the ends and picks per end, as well as the length and breadth of the pieces. The lungi trade has during the last two years been in a very depressed condition as the Indian labourers employed on the plantations in Ceylon, Strait Settlements, and Federated Malay States have returned to this country in large numbers. A number of the lungi weavers have taken to weaving Madras handkerchiefs.

Economic condition of handloom weavers.—It is not possible to obtain even an approximate indication of the general economic condition of the handloom weavers from a study of the figures obtained by the census, or from the figures of consumption of yarn shown in the All-India statistical publications. The question therefore whether there has been

any improvement or worsening in the economic condition of the weavers during the decennium cannot be adequately discussed as no figures are available which would enable a comparison to be made between the present and past condition of these workers in Southern India. There is some reason to believe, however, that the earnings of the handloom weaver producing cloths from fine counts have been affected by the higher import duties on cotton yarn as his margin between the net cost price of yarn and the sale price of cloth has been reduced. In endeavouring to estimate the economic position of the cottage workers supported by textile and other allied industries, a number of difficulties are met with. The wide range of products produced are the handiwork of different classes of textile workers who follow their respective occupations under varying conditions and their earnings vary accordingly. Even in the case of manufactures of similar varieties of cloth, the wages of the weaver vary in different places. Further the wages vary also in the same place according to the counts used and patterns produced, and according to the conditions of employment, i.e., whether the weaver is an independent worker, hired worker or a factory worker, or obtains part of his income from agricultural or general labour. Little, if any, progress has been made in the formation of weavers' co-operative societies, the difficulties met with in developing co-operative activities among the weaving community being due to a variety of factors among which may be mentioned (i) the indifference, ignorance and character of the weavers ; (ii) the difficulty in arranging for the regular disposal of the finished products, of a non-standard quality ; (iii) the vested interest of master weavers ; (iv) indebtedness of the weavers ; (v) the weavers' unbusinesslike methods ; (vi) the rarity among weavers themselves of men capable of running the simplest society. The malpractice and disloyalty to the societies of some of the poor weavers, lapses which may be due not so much to moral delinquency as to the precariousness of their existence and want of enterprise, have in no small measure contributed to the failure of these organizations.

Hosiery.—There are twenty hosiery factories in the presidency which are generally run by power. The more important factories are situated in Malabar and at Karur and Salem, the Malabar and Karur concerns manufacturing mainly net banians whilst those at Salem are engaged mainly on the manufacture of knitted banians. The factories appear to be fairly well employed as although they experience severe competition from the cheap and inferior Japanese goods some benefit is being derived from the preference shown for the swadeshi article. Competition is, however, very keen and prices are often unremunerative to the manufacturers. Consignments of hosiery goods are frequently forwarded by manufacturers for payment as and when they are sold and sales conducted on these lines are expensive. The market for hosiery goods in India is a growing one, only the fringe of the potential demand having yet been touched. India is Japan's principal customer for knitted goods.

Dyeing.—The statement in the margin shows the population supported by dyeing, bleaching, printing, preparation and sponging of textiles at the time of the last four censuses.

1901 ..	23,061	1921 ..	28,612
1911 ..	17,096	1931 ..	10,052

The census of 1911 showed a large fall in the population supported by this industry, but the figure given for that year was regarded as probably under the mark. The improvement shown in 1921 has not been maintained, the number for 1931, if it is reliable, being only 36 per cent of that of 1921. The sharp decrease is probably attributable partly to the trade depression prevailing at the time the census was taken. Certain places in the presidency have attained a reputation for dyeing different kinds of fabrics and in select colours ; Kumbakonam and Conjeeveram for dyeing silk and artificial silk, Negapatam for its black dye, Madura for its fast bright red, and its *Chungadi Sarees* and *Saya Veshties*, and Cocanada and Nellore for certain kinds of dyed cloths. The location of the industry in particular places has been chiefly due to the patronage of the rich in the neighbourhood and the facilities available, particularly the suitability of water in the area for dyeing purposes. In olden days dyeing was largely the hereditary and exclusive occupation of certain classes of people and it was an art which required a thorough knowledge of the several vegetable dyestuffs and the proportion in which they had to be mixed to yield different shades, but with the advent of cheap synthetic and coal tar dyes which are easy to mix under instructions supplied by manufacturers, dyeing has become rather a commonplace art. The classes of people engaged in the industry are chiefly Telaga, Balija and Kapu in the northern districts, washerman in Godavari and Vizagapatam districts, Rangarajus or Rangaries in the central districts and several classes, e.g., Mudaliyars, Yadavas, Banias, Nattars, Woddars, Pallas, etc., in the southern districts. Except in a few large dye-houses in places like Madura, Tanjore, Chirala and Masulipatam, generally a master dyer works with the members of his family or with the aid of coolies engaged for the purpose. Generally yarns are dyed on a small scale by the weavers themselves, and when a sowcar has a number of looms working under his control, he either imports dyed yarn or owns a dye-house employing

a group of dyers. Where yarns are dyed for sale, there are large houses with the necessary equipment. There is only one power-driven dyeing concern in this presidency, i.e., in Salem, but this has not been working for some time even with the assistance of a Government loan. The subjoined statement shows the quantity and value of dyes imported into this presidency :—

Year.		Alizarine. Quantity.	Alizarine. Value.	Aniline. Quantity.	Aniline. Value.	O.N.
		LB.	RS.	LB.	RS.	
1921–22	..	1,612,627	24,28,984	98,040	4,03,960	4
1922–23	..	1,400,029	13,59,403	324,511	8,31,253	2 5/8
1923–24	..	1,302,307	12,27,831	424,540	11,24,052	2 2/3
1924–25	..	1,810,130	14,26,273	771,787	15,76,972	2
1925–26	..	792,810	6,86,202	718,884	12,70,551	1 5/7
1926–27	..	1,322,404	9,95,905	934,813	16,62,116	1 7/9
1927–28	..	1,178,275	9,12,650	1,132,464	15,30,627	1 4/11
1928–29	..	1,227,652	8,01,101	1,176,386	18,84,299	1 7/11

It will be observed that imports of alizarine have fluctuated and that prices (as given in the customs returns) declined from Rs. 1–8–0 per lb. in 1921–22 to about 10 annas last year. This presidency takes about 25 per cent of the total quantity of alizarine imported into India. Her share in the imports of aniline is not so great, being a little less than 10 per cent but the quantity imported has, with the exception of the year 1925–26, shown a steady increase and is now over ten times the quantity imported in 1921–22. The declared value per pound which was about Rs. 4 in 1921–22 gradually declined, to Rs. 2 in 1925–26 and was just over Rs. 1–12–0 in the next two years. In 1927–28 it came down further to less than Rs. 1–7–0, but rose in the next year to about Rs. 1–10–0. The main dyestuffs used are napthol, alizarine red, indanthrene blue and other vat and aniline dyes and the colours used in dyeing are (i) direct colours, (ii) basis colours, (iii) vat colour, (iv) sulphur colours and (v) acid colours. First in importance from the standpoint of the quantity treated, is grey cotton followed by mercerized cotton, silk and artificial silk.

Engineering.

Engineering works.—The following statement shows the numbers of works that existed at the close of the years 1920 and 1930 and the number of hands engaged :—

		1920. Number.	1920. Number of hands.	1930. Number.	1930. Number of hands.
Government owned—					
Iron works and foundries	..	4	1,067	6	1,525
Electrical engineering	..	..	..	1	32
Private owned—					
Foundries	..	5	1,185	18	570
Railway workshops	..	19	16,167	20	15,267
Tramway workshops	..	1	597	1	388
Engineering (general)	..	5	544	15	1,720
Private owned—cont.					
Electrical engineering	..	..	..	2	241
Electrical Generating and Transforming station	..	..	..	1	441
Miscellaneous	..	..	..	2	83
Total	..	***35***	***19,560***	***66***	***20,267***

Although the number of factories has nearly doubled, the total number of hands engaged has not increased to any extent, and this probably points to the fact, apart from the extent to which it is due to the trade depression prevailing in 1930, that the tendency in these works has been towards installing more and more labour-saving machinery. Repair work and the manufacture of structural iron work and certain classes of machinery form the bulk of the work done by these foundries and engineering workshops. The Government-owned shops include the four Public Works Departmental Workshops at Madras, Dowlaishweram, Bezwada and Mettur, and the Industrial Engineering Workshops at Madras, whilst the Madras Corporation Workshop have a mechanical and electrical engineering of their own. Of the Railway workshops, the Madras and Southern Mahratta Railway owns twelve, i.e., three in Perambur, Madras, Waltair, Rajahmundry, Bezwada, Bitragunta, Donakonda, Guntakal, Gooty, Arkonam and Jalarpet. The South Indian Railway have workshops at Golden Rock, Shoranur, Podanur, Coonoor, Villupuram and Madura besides the Light Railway workshops at Kulasekarapatnam owned by the East India Distilleries and Sugar Factories, Ltd.

Fertilizers.

Fertilizers.—The country has continued to respond to the very active propaganda work carried on by those interested in the fertilizer trade as well as to the interest displayed by the Agricultural Department and the demand for fertilizers showed gradual expansion from 1921–22 to 1929–30 as will be seen from the statement below of imports of manures (excluding oil-cakes). The low prices ruling for all classes of agricultural produce since the latter year has adversely affected the fertilizer trade and sales have been reduced. The

demand from the rubber, tea and coffee plantations has fallen off considerably whilst as regards agricultural crops, the ryot has been unable to expend the same amount of money on manures for paddy, coconut, etc., owing to the low prices ruling for agricultural products.

Year.	Value.	Year.	Value.	Year.	Value.
	RS.		RS.		RS.
1921–22 ..	52,642	1925–26 ..	7,19,552	1928–29 ..	34,15,880
1922–23 ..	3,10,539	1926–27 ..	10,20,985	1929–30 ..	46·02 lakhs.
1923–24 ..	3,84,590	1927–28 ..	15,96,701	1930–31 ..	32·48 lakhs.
1924–25 ..	3,43,928				

Conditions in the manure manufacturing industry of the West Coast have on the whole been satisfactory during the period under review, but latterly owing to the depressed state of the plantation industries, the demand for manures has undergone a sharp contraction, tea and rubber estates being entirely unable to afford a manuring programme while in the case of coffee, the great increase in spraying has led to some diminution in the use of fertilizers though it is probable that in the long run spraying will necessitate increased manuring rather than otherwise. On account of the prevailing depression, several factories have stopped manufacturing operations in order to clear off surplus stocks. A policy of decentralization has been carried out with a view to effecting an economy in transport charges. Calicut is the chief centre but compound manures are now mixed on a considerable scale at Mangalore and Cochin for the respective planting districts served from these centres. The manufacture of fish manure and fish guano has been restricted during the last few years owing to the continued absence of sardine shoals in coast waters. The number of manure factories coming under the operation of the Factories Act which stood at two in 1920 has increased to seven, situated at Avadi, Samalkot, Obalapuram, Ranipet, Tudiyalur, Feroke and Kadambur. The total capacity of the bone-crushing factories in the presidency is about 24,000 tons, but the annual output has been only about 15,000 tons. The value of exports of bones and bonemeal has latterly come down slightly, i.e., from about nine lakhs of rupees in 1922–23 and 1923–24 to about six lakhs of rupees from 1925–26 onwards although it rose to over eight lakhs in 1929–30. The value of exports of fish manure which was over eleven lakhs of rupees in 1921–22, decreased in the next year to a little over eight lakhs of rupees and in 1923–24 recovered to nearly ten lakhs of rupees. In 1924–25 also the increase was maintained, the value rising to over 18 lakhs of rupees in that year—the highest point touched in the decade—but subsequently the value came down to 7·7, 5·8, 8·1, 4·6 and 1·9 lakhs respectively. Exports of oil cakes have averaged about 38,000 tons valued at over 46 lakhs of rupees of which sesamum cake accounts for 25 lakhs on an average which is absorbed almost entirely by Ceylon. Groundnut cake accounts for 18½ lakhs on an average, taken by Ceylon chiefly and Germany and the United Kingdom in smaller quantities. Coconut and castor cakes account for the balance, the former going chiefly to Germany and the latter to Ceylon.

Fish oil.—The large quantities of sardines (clupea longiceps) that used to constantly shoal on the West Coast were converted into manure by the wasteful and offensive method of sun drying on the open beach as they contain too much oil to be cured for edible purposes, and it was not until 1909 when the Madras Fisheries Department introduced a simple extraction process that any attempt was made to produce the oil. The oil is in demand for jute batching, candle and soap making and for paints, while the resultant cake, known as "fish guano" makes an excellent fertilizer. Within the last two decades upwards of 250 small factories with an aggregate output of nearly 6,000 tons annually have been erected along the coast for treating sardines. The business is, however, subject to sudden fluctuations, depending as it does on the availability of adequate sardines near the coast. Latterly owing to the continued absence of sardine shoals the industry has declined and along with it the export trade. The following table shows the exports of the oil to foreign countries :—

Exports of Fish Oil.

Year.	Quantity.	Value.	Year.	Quantity.	Value.	Year.	Quantity.	Value.
	GALLONS.	RS.		GALLONS.	RS.		GALLONS.	RS.
1921–22 ..	13,788	11,543	1925–26 ..	95,449	1,01,432	1928–29 ..	3,233	7,978
1922–23 ..	106,200	80,287	1926–27 ..	8,180	6,756	1929–30 ..	..	..
1923–24 ..	1,633,256	11,93,198	1927–28 ..	6,974	11,295	1930–31 ..	..	..
1924–25 ..	359,800	3,31,525						

Prior to the war, Germany and Belgium absorbed considerable quantities of the oil and subsequently too these two countries and the United Kingdom and Ceylon took large quantities. Latterly the Maldives and Ceylon have been the only consumers.

Jute.—The jute grown in the Madras Presidency is not the Corchorus variety, but Deccan hemp (Hibiscus cannabinus). Nevertheless it is capable of being put to much the same use as Bengal jute. The area under this variety has averaged about 65,000 acres, of which Vizagapatam district contributes about 75 per cent and Guntur district over 15 per cent. There were two jute mills in 1921 in Chittivalasa and Ellore ; the mill at Nellimarla was not started until 1922 while that at Guntur which was started in 1904, was not working at the time of the last census. The number of looms and spindles employed in these four mills as at the close of 1930–31 was 941 and 20.394 respectively, giving employment to nearly 6.500 hands. an increase of about 4.000 over the figure for 1921. The mills seem to have been working satisfactorily until the advent of the trade depression from which they have suffered severely owing to the decline in prices. The mill at Nellimarla has suffered much damage from the recent floods in the Vizagapatam district. The fluctuating nature of the export trade in the fibre will be seen from the following table :—

Year.		Quantity.	Value.	Year.		Quantity.	Value.	Year.		Quantity.	Value.
		TONS.	RS.			TONS.	RS.			TONS.	RS.
1921–22	..	912	2.61.342	1925–26	..	6,537	38.75.796	1928–29	..	2,821	8,97,442
1922–23	..	2.320	9.22.792	1926–27	..	1,885	7,83,122	1929–30	..	3,358	11,34,945
1923–24	..	747	2.51.615	1927–28	..	1.616	5,16,199	1930–31	..	1,603	2,97,787
1924–25	..	4.654	20,19.377								

The United Kingdom and Germany are the principal importers of Madras jute.

Tanning.

Leather, Hides and Skins.—The importance of the tanning industry to the Madras Presidency may be gauged from the fact that there are believed to be from 400 to 500 tanneries giving employment in normal times to about 40.000 hands with an estimated wages roll of over Rs. 35 lakhs per annum. Tanned hides and skins have been one of the most important exports of Madras ever since figures of seaborne trade were published. As early as 1875–76. the value of tanned hides and skins exported was about 1¼ crores of rupees, whilst for the ten years before the war the annual average was about 4 crores, divided about equally between hides and skins. During and immediately after the war, the exports of tanned hides increased to about 6 crores in each of the years 1918, 1919 and 1919–1920. As practically the whole outturn of the South Indian tanneries is exported, a study of the export figures gives a more than usually accurate indication as to the position of the industry. The tables below show the amount of trade during the five pre-war years which may be taken as the unit for purposes of comparison, and the annual exports from 1920 to 1932. The trade during the previous decade had been abnormal in many respects owing to the effects of the war.

Exports of Tanned Hides and Skins from Madras. (Weight in tons.)

Year.	Cow hides.	Buff hides.	Cow calf.	Buff calf.	Total hides.	Goat skins.	Sheep skins.	Other skins.	Total skins.	Total hides and skins.
Average 1909 to 1914.	..	..	300	..	7,606	2,780	2,600	..	5,679	13,235
1920–21	2,778	197	232	60	3,258	691	1,677	8 cwt.	2,368	5,626
1921–22	3,784	360	248	49	4,442	1,007	2,516	26	3,523	7,965
1922–23	6,792	598	510	175	8,075	1,156	2,860	7	4,016	12,091
1923–24	9,569	744	652	162	11,127	997	3,287	1	4,285	15,412
1924–25	9,276	797	570	214	10,857	2,504	2,783	9	5,287	16,144
1925–26	9,147	377	600	287	10,411	2,490	3,083	8	5,523	15,934
1926–27	8,515	382	611	262	9,770	3,051	3,014	5 tons.	6,070	15,840
1927–28	11,609	1,042	750	494	13,877	3,199	3,123	39	6,361	20,238
1928–29	12,327	1,293	659	573	14,854	3,072	3,941	82	6,095	20,947
1929–30	10,708	1,009	599	530	12,846	2,674	3,001	74	5,749	18,595
1930–31	9,236	605	500	386	10,727	2,779	2,678	34	5,491	16,218
1931–32	8,305	555	448	304	9,612	2,394	2,501	53	4,948	14,560

Exports of Tanned Hides and Skins from Madras in numbers. (000 omitted.)

Year.	Cow hides.	Buff hides.	Cow calf.	Buff calf.	Total hides.	Goat skins.	Sheep skins.	Other skins.	Total skins.	Total hides and skins.
Average 1909 to 1914.	..	..	366	..	2,125	6.346	8,321	..	15,028	17,153
1920–21	800	40	364	73	1.279	1.995	6,647	1	8,644	9,923
1921–22	1,158	72	391	59	1,683	2,772	9.776	4	12,552	14,235
1922–23	2,077	131	760	206	3.175	3.105	10,139	2	13,247	16,422
1923–24	2.867	170	928	192	4.158	2.747	12,251	5	15,004	19,162
1924–25	2.787	171	863	268	4,092	7.315	11.138	1	18,454	22,546
1925–26	2.750	83	970	346	4.151	7.953	11.945	9	19,907	24,058
1926–27	2,740	86	964	317	4.108	9.787	11,857	113	21,758	25,866
1927–28	3.642	234	1.214	614	5.706	10.197	12.748	564	23,510	29,216
1928–29	3.839	289	1.023	665	5.818	10.346	11.374	1,156	22,878	28,696
1929–30	3.616	229	900	597	5.343	9.170	11.875	1,121	22,167	27,510
1930–31	3.094	157	713	427	4,387	7.948	10,990	431	19,367	23,754
1931–32	2,785	129	536	341	3.792	8.331	9,402	737	18,471	22,263

Export of Tanned Hides and Skins from Madras. (Value in thousands of rupees.)

Year.	Cow hides.	Buff hides.	Cow calf.	Buff calf.	Total hides.	Goat skins.	Sheep skins.	Other skins.	Total skins.	Total hides and skins.
Average 1909 to 1914.	..	..	567	..	12,306	12,244	10,011	..	22,823	35,129
1920–21	7,138	374	902	214	8,632	6,435	11,626	2	18,064	26,696
1921–22	7,267	475	625	94	8,464	7,132	14,209	4	21,347	29,811
1922–23	14,169	984	1,495	351	17,001	8,806	15,122	2	23,931	40,932
1923–24	21,381	1,197	1,987	329	24,897	6,586	17,530	6	24,122	49,019
1924–25	21,566	1,510	2,216	534	25,828	17,004	16,153	4	33,161	58,989
1925–26	21,282	741	2,191	762	24,976	16,878	18,162	9	35,050	60,026
1926–27	19,300	707	2,320	823	23,152	20,979	19,443	212	40,634	63,786
1927–28	28,350	2,056	3,001	1,417	34,826	22,382	19,558	1,080	43,021	77,847
1928–29	31,420	2,729	2,627	1,767	38,546	21,775	18,356	2,091	42,223	80,769
1929–30	24,137	1,986	2,245	1,519	29,890	19,190	17,920	1,942	39,054	68,944
1930–31	20,145	1,114	1,462	951	23,675	15,735	15,793	632	32,165	55,840
1931–32	16,603	960	1,278	633	19,476	15,096	12,482	574	28,153	47,629

In the last census report it was stated that the leather trade was suffering from acute depression, and that this was so will readily be seen from the tables as the exports in 1920–21, whether taken as weight, number or value, were all very low indeed. At the end of the period under review it has also to be recorded that the industry is passing through a period of depression. But the present slump has affected the industry much more from the standpoint of reduced values than from quantity of exports which is as a whole still slightly above the pre-war average although less during 1931–32 in the case of sheep and goat skins. When comparing the figures given in the tables with the pre-war unit it should be borne in mind that (1) cow and buff hides were shown as one until 1913, (ii) that cow and buff calf were not shown separately until 1919 and previously were included under the sub-head 'Other skins' under the head 'Total tanned skins,' whereas they now come under separate sub-heads and under the head total of tanned hides. One feature of the trade in tanned hides and skins during the decennium was the comparative absence of the heavy fluctuations in the export trade so noticeable during the previous decade, although during the last two years the trade has suffered greatly as a result of the world-wide trade depression. The Madras trade in tanned hides which as already stated had attained a figure of about 6 crores during the two years 1918–19 and 1919–20 abruptly came down to less than a crore in the next two years owing to the post-war collapse in trade and it was only in 1922–23 that it attained the pre-war level largely as a result of the total clearance of stocks left in Government hands after the control imposed during the war had been withdrawn. From this position it advanced gradually with slight fluctuations until 1928–29 when the value of the exports amounted to over 3¾ crores of rupees. As practically all pre-war hides were plastered on the flesh with a mixture of flour and grease the weight of the leather exported in the pre-war years should be reduced by 6 to 10 per cent to make them directly comparable with the later figures. The chief contributing item in the exports is cow hides representing over 70 per cent of the trade in tanned hides, almost the entire quantity of which goes to the United Kingdom which country also takes almost the whole of the goat skins and a large proportion of the sheep skins exported from Madras. There has been a marked increase in the export of tanned calf—both cow and buff—the total exported during the last few years being from 250 to 400 per cent of the pre-war unit and although the total of this trade is small compared to cow hides, the amount of labour employed on these skins is considerably greater in proportion to both weight and value so that it has a direct bearing on the labour situation. The trade in tanned skins has not been subject to such severe fluctuations as that in tanned hides, whilst the trade curve in tanned sheep skins is less irregular than in goat. As a result of the boom in trade in 1919–20 the declared value of skins was higher than in previous years, amounting to over 4 crores of rupees, although the quantity was less than the pre-war figure. In the next year both quantity and value fell considerably, viz., from 4,100 tons to about 2,300 tons and from over 4 crores of rupees to 1·8 crores of rupees. There was then a progressive increase in trade particularly from 1924–25 onwards. This period of prosperity continued right up to the close of 1927–28 in which year the value of the exported tanned skins rose to the record figure of Rs. 4,30,21,800. Subsequently there was a gradual decline in the quantity of skins exported and its value. The combined exports of 'hides and skins' reached the highest point in 1928–29, being 150 per cent by weight, 165 per cent by numbers and 230 per cent by value of the pre-war unit. These figures had only once before been exceeded namely in the post-war year 1919–20. In the next two years 1929–30 and 1930–31, the trade decreased considerably owing to the world-wide trade depression, although the level of last year is still in advance of the pre-war level, the figures being 110 per cent, 130 per cent and 135 per cent respectively. The reasons for the increase in the volume of trade during the first seven years of the decennium are not altogether clear, but among the factors in the development of the industry were no doubt (i) the imposition of an export duty on raw hides and skins, (ii) new uses found for tanned hides in England, (iii) the greater uniformity

in the tannage and freedom from plaster on hides and adulteration in skins resulting from the control which existed during the war and (iv) the use of imported wattle bark in tanning hides which resulted in greatly cheapening the cost of production of hides and also rendered locally available greater quantities of avaram bark for the tannage of skins. During the war, the amount of leather that could be tanned in South India was found to be limited by the amount of tanning bark that could be procured. In the last two years of the decennium the tanning industry suffered severely from the world-wide trade depression which was intensified by the imposition of high duties on leather imported into the United States of America which had been a large consumer of Madras tanned goods. Previous to the imposition of the present rates of tariff, the United States imported large quantities of kip linings which the English curriers made from Madras tanned hides, but this trade is now almost extinct. One of the principal features of the trade during the period under review was the development of a lucrative trade in the export of reptile skins—particularly skins for shoe and fancy leather manufacture—lizard and snake, which came into great demand in Europe and America. These come under the head 'Other skins'. The trade increased from a few cwts. valued at from Rs. 2,000 to 9,000 during the period 1920–26 to 82 tons valued at about Rs. 21 lakhs in 1928–29. These figures do not, however, represent the actual amount of trade done from Madras during the period as very large quantities of finished skins were exported by parcel post; one firm alone is reported to have transacted about Rs. 10 lakhs of business in this way. Cobra, viper and other snakes are tanned with alum and formaldehyde and the fact that this particular tannage shows off the markings to good advantage has helped to make the leathers popular for fancy leather work. Later on, it was found that some types of reptiles, particularly the Calcutta water lizards and the United Provinces black lizards, yield skins which give a leather of great tensile strength and the course of the trade has shown that whereas the reptile skin trade started originally as a freak of a season's fashion, the leather has now come to stay and is becoming as much of a permanent feature in the Madras export trade as goat and sheep skins. In addition to the varieties mentioned, a large quantity of crocodiles, water lizards, pythons, and other types of reptile skins are imported in the raw state from Ceylon, Africa and Java and other countries and are tanned in Madras and shipped to the Western markets. It is a noteworthy fact that while the Madras avaram tannage confers upon the tannage of reptile skins, the same superiority over tannages of other provinces as in the case of sheep and goat skins, yet even in the case of mineral tannages, the Madras tanned 'white reptile leather' has taken the lead over skins of the same variety tanned elsewhere in India. There is a small number of factories in the presidency manufacturing chrome leather, the demand for which latterly has fallen off considerably partly owing to the importation of cheap Japanese canvas footwear and partly to the reduced purchasing power of the public. The industry is also handicapped by the heavy import duty levied on the chemicals and tanning materials which have to be procured from England or the Continent. The standard of quality of chrome upper leather production has been very greatly improved during recent years. As a result of the depression in trade in the last two years, losses varying from small to large have been incurred by both tanners and exporters, and the curtailment of production which naturally follows uneconomic prices has resulted in some unemployment among the tannery operatives. The number of persons engaged in 'Working in leather' according to the census figures was 45,259 in 1931 as against 132,232 and 69,797 in the years 1911 and 1921 respectively.

Machinery imports.—If the imports of machinery and mill work in a country afford a reliable index of its industrial development, there has been some improvement in this respect during the last ten years as the following statement of the total value of imports of machinery and mill work will show :—

Year.	Rs. Lakhs.	Year.	Rs. Lakhs.	Year.	Rs. Lakhs.	Year.	Rs. Lakhs.
1913–14	.. 75·35	1923–24	.. 188·53	1926–27	.. 164·14	1929–30	.. 198·42
1921–22	.. 218·57	1924–25	.. 152·14	1927–28	.. 187·76	1930–31	.. 179·00
1922–23	.. 232·93	1925–26	.. 149·35	1928–29	.. 220·02		

Except in the first two years of the decade, the imports have rarely exceeded Rs. 200 lakhs though it is likely that but for the general trade depression of the last two years, the gradual increase from 1925–26, would have been maintained. Of the machinery imported, textile and electrical machinery and prime movers are the most important, the average imports of these classes during the decade having been 42, 40 and 24 lakhs respectively. The other machinery and mill stores imported include sewing and knitting machines, belting for machinery, boilers, tea machinery, rice and flour machinery, typewriters and agricultural machinery. The imports of the first three alone have reached at any time Rs. 10 lakhs in value while the next two have been above five lakhs each year and all the others below this level.

Match industry.—This industry has come into prominence only within the last few years. The number of factories coming under the operation of the Factories Act at the close of the year 1930 was five—one large factory near Madras and four in Malabar. In addition to the above, however, there are some 70 factories scattered over the presidency confining themselves chiefly to preparing, finishing and marketing matches out of splints and veneers obtained from the four factories in Malabar referred to above. The products of these smaller factories, although inferior to the imported article in quality and finish, yet appear to command a more or less ready market in their neighbourhood, the chief factors operating in their favour being low overhead costs, cheap labour and demand for the output at or near the place of production. The table of foreign imports that follows shows how far the indigenous industry has developed at the expense of the imported foreign article, although Madras has been taking latterly a large and increasing quantity of indigenous matches from other parts of India. **Matches.**

Imports of Foreign Matches.

Year.	Value. Lakhs of rupees.	Year.	Value. Lakhs of rupees.	Year.	Value. Lakhs of rupees.	Year.	Value. Lakhs of rupees.
1921–22 ..	15·76	1924–25 ..	12·59	1927–28 ..	5·08	1929–30 ..	0·50
1922–23 ..	14·61	1925–26 ..	12·88	1928–29 ..	2·54	1930–31 ..	0·28
1923–24 ..	12·88	1926–27 ..	12·18				

Imports in 1931–32 further declined to Rs. 7,090. There have been large imports coastwise, however, from other ports in India as the following statement will show :—

Year.	Gross of boxes.	Value. RS.	Year.	Gross of boxes.	Value. RS.	Year.	Gross of boxes.	Value. RS.
1925–26 ..	304,330	7,75,476	1928–29 ..	2,048,914	31,06,221	1930–31 ..	1,167,610	16,65,056
1926–27 ..	749,505	13,65,138	1929–30 ..	1,762,576	25,87,770	1931–32 ..	1,247,555	15,28,943
1927–28 ..	1,837,483	31,86,071						

These matches are of indigenous manufacture, coastwise imports of foreign matches from other ports in India not being considerable. As already stated there is only one large factory at present manufacturing complete matches, and its output is stated to be about 1,500,000 gross of boxes using imported aspen wood for splints and veneers. The factories in Malabar confine themselves to making veneers and splints and exporting them in that form. The output of the smaller factories is estimated at about 500,000 gross boxes making a total production of two million gross for the whole of the presidency. Imports of matches, safety and other kinds, at the beginning of the decade were about one million gross. There has probably been an expansion in the consumption of matches in the country due to the growth of the smoking habit and other causes. It will be seen therefore that the imports from other parts of India have more than offset the almost total extinction of the import trade in foreign matches and that the local production is probably able to satisfy about two-thirds of the demand. The number of persons returning themselves as engaged in the manufacture of matches, fireworks, and other explosives is 883, which figure does not seem to be reliable as the factories in Madras city and its outskirts alone appear to employ more than this number.

Metals and metal works.—In addition to the workshops there are now ten metal works employing 1,030 hands whereas there were only two such factories in 1920, one in Madras and the other in Kalahasti in Chittoor district, each employing about 250 hands. The number of aluminium factories has now increased from one to three, viz., two in Madras and one in Rajahmundry—employing nearly 500 hands and the seven bell-metal factories in Kalahasti employ about 530 hands. Of the metals other than iron and steel, brass, copper, aluminium and tin are the principal ores imported, brass amounting to about 60 per cent and copper and aluminium about 13 and 9 per cent respectively. Most of these metals, besides being used in the metal factories are largely used by the cottage metal-workers who are scattered all over the presidency. The chief centres of the cottage industry are Kumbakonam, Trichinopoly, Udipi, Palghat, Conjeeveram, Dindigul, Karaikudi, Tirukkalikkunram, Anapurapalaiyam, Muddunaickanpettai, etc. The West Coast districts use only copper, Salem and Coimbatore use both copper and brass, while the Ceded districts, the Circars, Tanjore and other southern districts use brass chiefly, the use of brass-wares being more in vogue in the south than elsewhere. Lead is used in Tanjore and Vizagapatam for making culinary vessels, the former using besides sheet tin for making vessels. Bronze and bell-metal are more or less the monopoly of Dindigul, Kumbakonam, Vellore, Tirupati, Kalahasti, Parvatipur, Bobbili and Anakapalli. The caste system and hereditary skill are the potent factors that have influenced persons to take to these industries, the Asari caste—Viswakarma Brahmans—preponderating over every other

community and the exceptions being chiefly the Muhammadans and Woddars of Vonipenta (Cuddapah), Kapu in Nellore and Goanese Christians on the West Coast. Another characteristic feature is that the industry has largely adapted itself to the family organization with its limitations and advantages. The workman engages himself in the work with the help of assistants recruited mostly from his family or relations and is supplied with the raw materials by the sowcar who takes back the finished wares after paying the wages. This is the rule and the independent workman buying his own material and marketing the finished product on his own account is the exception, the bulkiness of the articles and their comparatively high cost combined with the lack of capital of the worker being chiefly responsible for this state of affairs. The methods and processes of manufacture are still archaic and little or no attempt has been made to introduce labour saving appliances and uptodate methods of manufacture. The worker is apathetic, has little technical knowledge and is satisfied if he is enabled to earn sufficient to meet the day's requirements and cares little for the morrow. Aluminium is not manufactured in this country, but Indian labour is largely employed in the manufacture of hollow ware utensils. This industry which was first started in 1898 at the Madras School of Arts is now carried on in this presidency at Madras on a factory scale and in the Godavari and Kistna districts as a cottage industry. Madras is the chief importer of unwrought aluminium comprising ingots, bars, blocks, etc., the value of which has averaged about 2½ lakhs of rupees, while imports of sheets and other manufactures of aluminium account for the balance, representing Rs. 3½ lakhs worth of goods annually on an average. The industry has suffered during the decennium from over-production.

Rubber.

Rubber.—The area under rubber in the Madras Presidency which was over 13 per cent of that in India and Burma in 1919, has latterly contracted and is now about 9 per cent only, Burma and Travancore preceding it in importance.

Production and Exports of Rubber.

Year.			Raw rubber exports, 1921–22, etc.	Year.			Raw rubber exports, 1926–27, etc.
	ACS.	LB.	RS. LAKHS.		ACS.	LB.	RS. LAKHS.
1921 ..	11,436	467,223	52·92	1926 ..	14,204	2,540,296	141·32
1922 ..	10,513	1,172,490	39·39	1927 ..	14,378	2,623,758	141·76
1923 ..	11,452	1,434,293	63·50	1928 ..	15,201	2,872,888	138·84
1924 ..	11,257	1,394,899	74·82	1929 ..	15,089	2,679,621	124·38
1925 ..	12,495	2,165,780	144·43	1930 ..	13,561	1,991,512	99·48

As will be seen, the area and yield which had been increasing more or less steadily, declined in the last two years of the decade. Malabar is the most important district producing rubber, the Nilgiris and Salem coming next. Of the 1927 production, Malabar contributed 2,182,097 lb., the Nilgiris 272,814 lb. and Salem the balance of 168,847 lb. It will be seen that in the middle of the decade, the value rose to three times the figure for the first two years, although the value declined to slightly less than a crore in 1930–31. The rubber position during the last few years has been the most serious in the history of the industry. The cessation of tapping in May 1930 did little to stem the tide of falling prices and with the failure of negotiations for an Anglo-Dutch restriction plan in the middle of that year, the resulting average price of the commodity has since involved all producers in a loss. Consequently the estates in Southern India are gradually closing down though some of them are being maintained for the time being on a caretaker basis. Even this state of affairs cannot continue indefinitely as most estates and companies have only very limited resources and in many cases it will only be a matter of time before the rubber estates are entirely abandoned.

Silk.

Sericulture.—Kollegal taluk is the only centre where the rearing of silkworms and the reeling of cocoons are carried on on an intensive scale under purely cottage conditions and sericulture forms the main occupation of the people in almost all the villages. On an average about 11,000 acres of land has been devoted to mulberry cultivation with an outturn of about Rs. 25 lakhs worth of silk, all of which is consumed in the silk weaving centres of the presidency. Silkworm rearing is the main subsidiary occupation of several agricultural classes in the Kollegal taluk including Sivabhaktas, Gangadhikars, Gowdas, Uppaligars and also Adi-Dravidas, and the successful development of the sericulture industry will open up fresh avenues of employment for the rural population. The number engaged in the industry according to the census figures is 1,004 made up of as in the margins :—

	Males.	Females.
As principal occupation ..	85	170
As working dependents ..	45	104
As a subsidiary occupation.	574	26

This figure cannot be accurate since having regard to the number of acres, viz., 10,000, under mulberry at least 5,000 families should be engaged in the industry at the rate of two

acres for each family. Womenfolk play a considerable part in the rearing of silkworms and the care and vigilance they bestow upon the rearing of worms are largely responsible for the considerable progress that has been made in the industry.

Silk weaving.—Silk weaving is carried on mainly as a cottage industry in the presidency although there are two or three factories, e.g., in Peddapuram and Rayadrug. The principal centres of the industry are Berhampur, Peddapuram, Dharmavaram, Kumbakonam, Kornad, Salem, Coimbatore, Kollegal, Madura and Conjeeveram. The class of people engaged in the industry are Sourashtras, Padmasalis, Devangas, Saliyan, Patakaris, etc. The numbers actually engaged in silk spinning and weaving in 1911, 1921 and 1931 are given in the margin.

Year.	Number.	Year.	Number.
1911 ..	74,773	1931 ..	34,489
1921 ..	34,984		

It was estimated in 1911 that this presidency produced silk goods to the value of 80 lakhs of rupees every year, the fabrics produced being mainly those particularly suited to the taste of the people of South India chiefly women's sarees and men's angavastrams and turban cloths. The consumption of raw silk was estimated some years ago at 800,000 lb. made up of 360,000 lb. from Kollegal, 300,000 lb. from Mysore, 100,000 lb. from China and 40,000 lb. from Bengal. The imports of raw silk have since increased from 56,218 lb. in 1915–16 to 825,936 lb. valued at over 47 lakhs of rupees in 1929–30 although the following year showed a sharp decline in the quantity and value of the imports.

Ericulture.—The Department of Industries is pioneering a new industry called ericulture. The eri worm feeds on castor leaves and as it is hardier than the mulberry worm and no life-taking is involved (as in sericulture) which is against Hindu sentiment, it is easier to propagate. There are about 300,000 acres under castor cultivation in the presidency chiefly in the Northern Circars, Ceded Districts and Central Districts, and the cultivation now is for seed purposes only. If the castor leaves now wasted are utilized to rear the eri worms a large industry can be built up without any detriment to the seed. Successful attempts have been made at Kuppam in the Chittoor district to rear the worms and spin the cocoons into yarn and the results have encouraged the starting of the industry in several parts of the presidency. The cocoons have to be marketed as such or spun into yarn. The Department of Industries is now engaged in investigating the possibility of finding a market for the cocoons in several parts of the world and has sent small consignments to America, London, Hamburg and Milan. The economics of the industry generally are also being closely studied.

Sugar.—As will be seen from the statement below, the area under sugarcane which stood at 103,308 acres in 1920–21, rose gradually to 131,095 acres in 1922–23 and after several fluctuations, decreased to 89, 075 acres in 1928–29, while in 1930–31 it rose again to 114,877 acres. That under palmyra has fluctuated during the decade between 87,148 acres, the highest in the decade, and 74,018 in 1930–31. **Sugar.**

Sugarcane. Year.	Cultivation.	Total produce (jaggery).	Export.	Sugar. Import.	Sugarcane. Year.	Cultivation.	Total produce (jaggery).	Export.	Sugar. Import.
	ACS.	TONS.	TONS.	TONS.		ACS.	TONS.	TONS.	TONS.
1920–21 ..	103.308	273.400	17,300	19.000	1926–27 ..	119,495	304.500	1,800	54,000
1921–22 ..	119.313	314.500	4,100	15,000	1927–28 ..	105,950	282,500	2,600	66,000
1922–23 ..	131,295	358,000	2,900	10,000	1928–29 ..	89,075	245,000	1,900	72,000
1923–24 ..	121,298	320.400	32,500	12,000	1929–30 ..	98,107	275.000	..	..
1924–25 ..	110.360	313,200	20.000	30,000	1930–31 ..	114,877	300.000	..	..
1925–26 ..	112,821	315.000	2,200	29,000			(rough).		

There were in 1921 eight sugar factories in the presidency employing about 3,500 hands. The number actually working at the close of the year 1930 was only five, situated at Aska, Samalkot, Nellikuppam, Tiruvannainallur (South Arcot) and Tachanallur. The number of hands engaged in these five factories is only 2,312. India imports annually about one million tons of sugar valued at about 15 crores of rupees, the share of this presidency being less than 100,000 tons valued at over one crore of rupees. Considering the large quantity of sugar imported, there seems to be scope for extending sugar manufacture in the presidency. The limiting factors for the extension of sugarcane cultivation in the presidency are soil, water-supply, drainage, capital, and the ryots' ingrained preference for paddy. Sugarcane is largely grown in small blocks under the management of individual ryots and in very few tracts is the cultivation sufficiently concentrated to supply a sugar factory which for satisfactory working requires a minimum of 2,000 acres of cane. The line of advance in regard to the development of sugar manufacture therefore appears to be to endeavour to improve the varieties of sugarcane and the yield per acre and, by cheapening the cost of making jaggery and sugar by setting up efficient mills, to centralize and expand sugarcane cultivation. Although the Indian Sugar Committee advocated the setting up of large central sugar factories worked on modern lines as in Java and the Tariff Board also came to the conclusion that the indigenous method of manufacturing

white sugar in India should ultimately be replaced by central factories, they recognized that it was out of the question to erect large sugar factories when there was no certainty of obtaining the cane required within a reasonable distance and that small sugar factories and refineries should come into existence in the transition period before central factories are established. In the Madras Presidency, the scope for the setting up of further large factories will be limited until the cultivation of cane is extended and concentrated in important areas. It is therefore necessary to investigate whether it would not be possible to manufacture sugar on a small scale on more or less cottage industry lines. It is possible that as in the United Provinces, the cottage industry of sugar manufacture in the Madras Presidency as it develops may form itself into compartments or groups such as (i) cane growing, (ii) rab boiling including cane crushing and (iii) refining. The Department of Industries has recently taken steps to introduce centrifugals for the separation of crystals from the molasses in localities where scope for small scale sugar manufacture exists. The protection afforded by the increased duty on imported sugar should provide the necessary stimulus to the industry and over the next decade a considerable expansion in the quantity of sugar manufactured in the presidency should be seen.

Tea.

Tea.—Tea is cultivated in the presidency in the districts of the Nilgiris, Coimbatore, Malabar, Madura and Tinnevelly in order of importance.

Production and Export of Tea.

Year.	Acres.	Production.	Exports (million lb.) (1921–22 etc.)	Value of Exports.	Year.	Acres.	Production.	Exports (million lb.) (1926–27 etc.)	Value of Exports.
		Lb.		Rs. lakhs.			Lb.		Rs. lakhs.
1921 ..	42,496	11,521,836	27·23	178·05	1926 ..	51,864	22,483,481	42·94	363·72
1922 ..	44,549	14,240,322	30·39	202·51	1927 ..	58,114	24,132,189	45·74	391·18
1923 ..	46,411	18,095,755	38·56	286·99	1928 ..	63,601	26,785,363	49·32	419·08
1924 ..	46,945	19,696,357	37·72	301·03	1929 ..	66,878	27,630,409	49·67	425·18
1925 ..	48,783	21,113,061	43·13	353·38	1930 ..	70,568	26,491,839	48·57	411·68

At the beginning of this century the area under tea cultivation was 7,000 acres and it rose to about 18,000 by 1910 and to over 70,000 acres in 1930. Production has also increased from one million pounds at the beginning of the century to about 27 million pounds. The first three districts—the Nilgiris, Coimbatore and Malabar—account for practically the entire acreage and production, in the proportion of 48 per cent, 33 per cent and 19 per cent respectively (1929 percentages). The exports of tea, which averaged about 19 million pounds in the pre-war quinquennium, rose to nearly 25 million in the war quinquennium and have now reached nearly 50 million valued at over 4 crores of rupees.

The United Kingdom and Ceylon are the principal customers, the latter taking it mainly for purposes of distribution to foreign markets. Out of a total world production of tea amounting to about 900 million tons, India accounts for about 400 million tons, the Madras share being about one-sixteenth of this. The trade in tea was maintained on a fairly prosperous level until the onset of the world-wide economic depression, from which it has suffered severely. In 1930 there was a curtailment of production which reduced the output of the world by about 50 million pounds whilst there was a further reduction by 22 million pounds due to climatic conditions, but the statistical position continued unfavourable and prices dwindled with the result that during the last two years very few low elevation estates have been able to produce tea at a profit. The best hope for the industry is a steady increase in consumption of tea in India itself and this is being encouraged in every way possible by the Indian Tea Cess Committee and other bodies.

Tiles.

Tile industry.—The number of tile factories in this presidency coming under the operation of the Factories Act in 1911 was 23, in 1920, 37 and at the close of 1930 the number was 57, exclusive of the several smaller factories lying scattered on the West Coast. The number of operatives engaged in these factories had also risen from 4,599 in 1920 to 6,687 in 1929 (it was 6,628 in 1930). South Kanara accounts for 37 factories, Malabar 17, and South Arcot, Godavari, East and Godavari, West, one each. The number of operatives engaged in the 17 factories of Malabar was higher than the total South Kanara figure, viz., 3,598 as against 2,871 in the latter district. Owing to the general economic depression, building operations have been greatly restricted in all markets and consequently the demand for tiles has latterly dropped very considerably with the result that there has been overproduction and prices have fallen to a marked extent. The outlook is therefore gloomy unless there is a general revival of trade in the near future. Indian factories are reported to compete at a great disadvantage in the Penang and Singapore markets as it is impossible to get steamers to convey the shipments to these places, while French tiles are being imported by every steamer direct from Marseilles.

Vegetable Oil and Soap and other allied industries.—The Madras Presidency occupies a very important place in India as a producer and exporter of oil-seeds of various kinds, those most commonly cultivated throughout the presidency being groundnut, coconut, castor, gingelly and cotton-seed. In Malabar the chief crop is coconut, in the Circars and southern districts gingelly, in South Arcot, North Arcot, the Ceded Districts, Coimbatore, Salem, Trichinopoly and Guntur, groundnut, and in the Ceded Districts, Nellore, Guntur and Salem, castor. The number of oil mills in this presidency coming under the Factories Act rose from 6 in 1921 to 34 in 1931, the number of hands employed being 276 and 900, respectively. Besides these factories, there are a number of mills working on a smaller scale in several parts of the presidency, while in addition the primitive bullock-driven chekku is installed in almost every village of importance. The extent of the cultivation of oil-seeds will be seen from the following statement :— **Oil-seeds.**

Acres under cultivation of the different kinds of oil-seeds in the presidency in 1930-31.

Groundnut.	Gingelly.	Castor.	Coconut.	Other oil-seeds.	Total.
13,571,978	745,630	283,238	565,971	164,463	5,331,522

Groundnut.—Groundnut is the most important of the oil-seeds grown in the presidency and the following statement shows how the cultivation has expanded since 1915 :—

Area under and Yield of Groundnut.

Year.		Total area (in acres).	Total yield (in tons).	* Yield per acre (in lb.).	Exports (000 tons).	Year.		Total area (in acres).	Total yield (in tons).	Yield per acre (in lb.)	Exports (000 tons).
1915–16	..	1,136,000	..	..	..	1923–24	..	1,812,000	746,000	923	224
1916–17	..	1,796,000	..	..	67	1924–25	..	1,904,000	948,000	1,115	330
1917–18	..	1,415,000	680,000	1,088	63	1925–26	..	2,599,000	1,263,000	1,089	370
1918–19	..	1,001,000	442,000	900	8	1926–27	..	2,680,000	1,207,000	1,023	318
1919–20	..	1,144,000	568,000	1,120	70	1927–28	..	3,337,000	1,670,000	1,118	472
1920–21	..	1,600,000	740,000	1,040	86	1928–29	..	3,679,000	1,830,000	1,114	584
1921–22	..	1,459,000	678,000	1,050	21	1929–30	..	3,209,000	1,523,000	1,062	583
1922–23	..	1,754,000	823,000	1,050	225	1930–31	..	3,572,000	..	..	457

* Less 25 per cent if decorticated.

The trade in groundnuts is of considerable economic importance to the Madras Presidency, the annual exports to foreign countries during the three years 1927–28 to 1929–30 having averaged over 13 crores of rupees or about 25 per cent of the total foreign export trade of the presidency. The trade attained considerable prosperity during the decade, starting with an export of 86,166 tons valued at Rs. 2·31 crores and rising steadily with slight fluctuations, to a figure of 584,241 tons valued at 14·28 crores of rupees in 1928–29. This year proved a boom year for the trade on account of the great demand for groundnuts from European markets and many agriculturists who had temporarily neglected this crop took to it and made good profits. The tide of prosperity suddenly turned in the next year although the groundnut export was only slightly less than in 1928–29 and then followed a period of acute economic and trade depression unprecedented in its extent and intensity and the cultivators who were in hopes of realizing large profits in 1929–30 met with severe disappointment. The fall in the prices obtainable for groundnuts in foreign markets to a lower level than any reached since the war was attributable mainly to (*a*) the general trade depression and decline in commodity values, and in particular the worldwide agricultural depression resulting in a falling off in the demand for cattle-feeding stuff which affected to a marked extent the price of and demand for oil-seed, cake and compounds made therefrom, and (*b*) the competition which groundnut is meeting from the increasing sources of oil of a similar type such as the palm and soya bean, the supply of which has been increasing rapidly in recent years. On the abandonment of the gold standard in September, prices of groundnut recovered to some extent and an encouraging feature of the situation is that the price of groundnut has maintained itself during the last year much better than has that of soya bean.

Castor and Gingelly.—The area under castor and gingelly in the presidency has averaged about 300,000 and 750,000 acres respectively and the export trade in the former is given below for the last four years.

Exports of Castor Seed.

Year.		Castor (tons).	Value.	Year.		Castor (tons).	Value.
			RS.				RS.
1927–28	..	18,539	39,26,529	1929–30	..	33,115	66,76,749
1928–29	..	40,992	82,97,770	1930–31	..	41,279	71,80,727

Exports of copra, cotton-seed and gingelly from this presidency are not of any great importance.

Lesser known oil-seeds.—Besides the oil-seeds of chief economic importance there is a large number and variety of lesser known oil-seeds grown in different parts of this presidency of which no statistics are compiled either of production, export or consumption in the country. They include Maroti (Hydnocarpus wightiana), Punna (Calophyllum inophyllum), Mowrah (Bassia longifolia and latifolia), Pongam (Pongamia glabra), Margosa (Melia azadirachta), Dhupa fat (Vateria Indica), Macassar (Schleichera trijuga), Ganja seed (Cannabis Indica), Jungle castor (Jatropa curcas) and Coculus indicus. Most of these grow wild and are seldom systematically cultivated as they have not yet attained much commercial importance. The oils obtained from most of these seeds are not edible (Dhupa fat and Mowrah excepted), but they can be employed for lighting, soap making and other technical purposes and some of them possess also medicinal properties. The Kerala Soap Institute has done much research work on and demonstrated the possibility of using such oils as those derived from Maroti, Mowrah, Ganja seed, Pongam, Macassar and Punna in the manufacture of soap, etc. Maroti oil (Indian chaulmugra oil) is a well-known cure for leprosy and skin diseases. If Mowrah oil, Dhupa fat and the oil of Coculus indicus amongst others, could be made available in quantity they could profitably be utilized by manufacturers of toilet soaps in India as the majority of Indians object to the use of animal fats in soaps.

The raising of the ganja crop is a Government monopoly and until recently the surplus seed used to be destroyed. As a result of experiments conducted at the Kerala Soap Institute, however, it has been shown that it can be converted into oil and the Institute is now using the oil which has fairly good drying qualities and could replace to some extent linseed oil in the manufacture of paints and soft soaps.

Exports of vegetable oils.—Madras exports of castor oil were formerly of the value of about 12 lakhs of rupees, but during the last three or four years the value has declined to about four lakhs of rupees. The exports of coconut oil during the last three years have not exceeded two lakhs of rupees in value, while exports of groundnut oil have amounted to less than one lakh. The share of Madras in the export of other oils is negligible so that the total trade of Madras in vegetable oils has not exceeded in recent years eight lakhs of rupees.

Soaps.—The soap industry in India is of comparatively recent growth. Twenty years ago there were very few soap factories and most of the soaps used by the people were imported from foreign countries. The quantity imported into India rose from about 250,000 cwts. in 1909–10 to about 450,000 cwts. in 1929–30, the share of Madras for the two years being 20,000 cwts. and 52,000 cwts. respectively, though the import figures have recently showed a decline. The total imports of soaps into India during the six months April to September 30th, 1931, fell to 174,191 cwts. valued at Rs. 51·36 lakhs against 223,553 cwts. valued at 84·12 lakhs for the six months ended 30th September 1929. While the decline in imports may be largely attributable to the prevailing trade depression, it is likely that the soaps made in this country are also making some headway against the imported product assisted by the preference for the Indian-made article. The Kerala Soap Institute, Calicut—a pioneer factory started by Government about 17 years ago—has, as pointed out elsewhere, been instrumental in bringing into existence numerous other factories in India where soapmaking is conducted on modern scientific lines but there is still a large number of establishments where soap is made by crude methods.

In the Madras Presidency there are about 150 small soap factories, of which only about half a dozen produce good boiled soap and the rest only cold drawn adulterated soaps. The output of soap in this presidency may be estimated at about 4,000 tons per annum, the number of workmen employed being about 2,000.

Essential oils.—Apart from the sandalwood oil factories owned and worked by the Government of Mysore and numerous petty stills in various places in Cochin and Travancore for the extraction of lemon grass oil, the only essential oil factories of importance are two in Kuppam and one in Yercaud. The Kuppam factories are concerned mainly with sandalwood oil, though they also handle at times cardamom, patchouli, cloves, vetivert and several varieties of odoriferous grasses. The total quantity of sandalwood oil distilled by one of the Kuppam factories is reported to average 15,000 lb. a year, 70 per cent of which is exported and 30 per cent consumed in India. The output of the other one is somewhat less. The Yercaud plant owes its existence to the enterprise of a Frenchman and operates on French geranium, rose, jasmine, tuberose, vetivert, cardamom, etc. Most of the plants are grown in Yercaud and a major part of the oils distilled is exported to France, the rest being sold in India. A planter near Bangalore is distilling linaloe oil from a wood—species of Bursera—introduced from Mexico, which is being marketed as Indian lavender oil. Eucalyptus oil is distilled in the Nilgiris by planters and firms, the output of the 100 or so stills which have been set up there being estimated to be about

25,000 lb. per annum. There is a fairly good demand for the oil in India. The exports of these oils from India pertains more to this presidency than to other provinces for although they are exported through ports outside the presidency, the oils are produced chiefly in the Madras presidency and the States of Mysore, Travancore and Cochin. Lemon grass oil is exported entirely from Madras ports, but a portion of the sandalwood oil produced in Mysore State and Kuppam goes via Bombay and other ports.

Sandalwood oil which is the most valuable of all is a monopoly of Southern India, especially Mysore, but it has now to face fierce competition from Australia which is distilling oil from a different species of sandal tree (S. Spicatum) which is found to possess more or less similar properties to the Indian oil (derived from S. Album). The trade in the Indian oil is bound to suffer from the competition in the European markets of the Australian variety, which is largely advertised. The Indian essential oil industry is not yet set on a firm footing. Vetivert, ajoqa, cardamom, coriander, ginger, cloves, etc., and several varieties of fragrant gums and resins are still being exported largely instead of being marketed in the country. There is scope for extending the production of such crops by systematic cultivation as is done in some other countries, while the recovery of the essential oils *in situ* is likely, with proper organization, to prove remunerative.

Vegetable fats.—A passing reference has been made in an earlier part of the chapter to the fact that the exploitation of the oil seed resources of the province must depend to a great extent on general individual development and the setting up of factories such as soap factories, or factories for the manufacture of vegetable fats. The former is dealt with separately, while as regards the latter, India imports annually over one crore of rupees worth of vegetable ghee, vegetable fat, etc., most of which is consumed as edible fats or substitutes for ghee. The imports into Madras are also large having attained a high level of Rs. 19,84,214 in 1928–29.

Though America, Europe and Japan have perfected commercial processes of hydrogenation or hardening of oils and are operating a number of plants, it is only recently that some attempts have been made in India to establish factories for hardening oils. With the advent of cheap electric power, an all-important factor in the economic production of hydrogen, there should be scope for the setting up of at least one large factory in the presidency, for there should be a steady and growing demand for hardened fats both for use in the manufacture of toilet soaps and as a suitable substitute for ghee. At present Indian manufacturers have to depend largely upon tallow in the manufacture of high class toilet soap. Local tallow is of very indifferent quality and is extremely wasteful to refine, while the quantity available is neither steady nor sufficient. On the other hand, tallow imported from Australia, New Zealand and England, is very expensive. Soap manufacturers in India who have to use at present an expensive tallow for high class soap are therefore placed at a disadvantage in competing with soap makers in Europe. An assured and cheap supply of a suitable tallow substitute prepared from vegetable oils in this country would give a decided impetus to the development of the toilet soap industry. At present pure ghee is not available in India in sufficient quantities and the price also is very high while most of the bazaar ghee is unwholesome and grossly adulterated, often with deleterious substances. As a result ghee substitutes manufactured in Europe are finding an increasing market in India. The production of cheap ghee substitute in India therefore is much to be desired. The importance of this question has been appreciated by the Local Government and experiments have been initiated at the Kerala Soap Institute, Calicut, on the refining, deodorising, and blending of oils, etc., with a view to placing accurate data before firms interested in developing this branch of the industry.

APPENDIX II.

Methods and Processes of Disappearing Industries.

(By L. B. Green, Esq., M.B.E., Deputy Director of Industries.)

The term " disappearing industries " has for the purpose of this note been taken to connote industries which have either disappeared or are in the course of disappearance, owing to various causes, e.g., competition from imported articles of superior make and finish, change in fashion and taste, substitution by cheaper but equally good articles.

Some of the industries referred to below if not actually disappearing are at least declining and unless encouraged and developed they cannot hope to continue for long.

(1) Bangle industry.
(2) Hand-made paper.
(3) Kalamkari or painted cloth manufacture.
(4) The manufacture of pithwork including garlands, musical instruments, etc., in Tanjore.
(5) Indigo.
(6) Kondapalli toy industry.
(7) Lacquer work.
(8) Boat building.
(9) Jatka building.
(10) Gold and silver lace thread.
(11) Crochet lace.
(12) Artistic pottery.

Bangles.

1. *Bangle industry.*—This industry may be said to be almost extinct in the Madras Presidency except for sporadic attempts made in a few places to produce bangles in the districts of Bellary, Kurnool, Anantapur, Chittoor, Trichinopoly, Nellore, Kistna and Vizagapatam. The more important centres of the industry are Dhone (Kurnool), Somapaliem and Maddiledu in Chittoor district and Gutturu in Anantapur district. The bangle-makers belong mostly to the caste of Gazula (i.e., ' bangle ') Balijas or Telagas, although lac bangles are made by Muhammadans. Bangles are prepared both from block glass imported chiefly from Ferozabad in the United Provinces and locally prepared materials. In the Madras Presidency block glass is manufactured chiefly in Anantapur and Kalahasti from alkaline earth. The process of collection of the saline earth generally begins at the end of the rainy season owing probably to the fact that the earth can be removed more easily then. Certain varieties are collected and lixiviated with water. The solution is stored in pots and is sprinkled over a plot of land which is previously prepared with cattle dung washing to present a firm but smooth surface. This process of sprinkling is continued for about 40 days and at the end of the period, a deposit of saline earth is formed on the ' kallam ' by solar evaporation. The crystals are then scraped out from the ' kallam ' and mixed with a kind of flint and some old broken bangles and the whole is fused in a furnace into a vitreous mass resulting in impure glass. The furnace is usually a cone shaped one about 5 to 6 feet in height capable of holding 100 to 150 pots or pans filled with the mixture. The first row of pots or pans is arranged in a circle and the others are placed over them until they reach the roof of the kiln. It is then closed with earth except for a small opening at the top and lighted from underneath. After they have been fired and allowed to cool on the oven for a number of days, the pots are removed and broken to release the block glass contained in them. The various hues are obtained by mixing dyes with the alkaline earth before melting. The process employed in the manufacture of bangles is to powder the block glass, mix it with broken pieces of old bangles and melt it in earthen crucibles in small furnaces. Imported block glass is melted straight away without any addition of pieces of broken bangles. A small quantity of this melted glass is then taken on the point of an iron rod and turned rapidly round and round until the glass assumes the form of a rough ring. The ring is then transferred while still hot to a conelike bulb attached to the point of an iron rod over which small grooves of varying sizes have been cut, and twisted round. While in rotatory motion, the maker shapes the bangles with brass moulds to obtain a flat, round or curved surface as the case may be. The bangles made in the presidency are the ordinary cheap variety in different colours although the Kurnool product is superior to the Bellary one as it is made more attractive by painting it with tinsel. Lac bangles are manufactured at Trichinopoly, Nellore and Udayagiri. The average daily production of a workman ranges from 500 in Bellary to 3,000

bangles in Chittoor, varying according to his skill and experience, the wages also varying from 10 annas to Re. 1-4-0 a day. In the absence of a steady demand, however, the work keeps him engaged for only 10 days in a month. The industry is now almost dead and the chief causes for the decline are the competition from the cheaper and more attractive Austrian and Japanese bangles and, to some extent, the restriction on the removal of fuel and the rise in its price. It is not likely that even with Government assistance the indigenous bangle industry would be able to withstand the severe foreign competition which has practically destroyed it. Even regarded as a cottage industry, the production of cheap bangles seems to afford so little a margin of profit to the agriculturist that it would be inadvisable to encourage him to pursue it in preference to other cottage industries from which a higher return could be anticipated.

2. *Paper industry.*—The industry is at present carried on at Aminjikarai near Madras and it is almost extinct in Nyamadala, Kondapalle (Bezwada taluk) and Kondaveedu (Guntur district). In Nyamadala, some thirty years ago, there were 24 Kharkhanas making paper and engaging 40 families, the product finding a market in Bellary. In a neighbouring village, viz., Chindapalle, there were 4 Kharkhanas engaging from 10 to 12 families. About that time some 60 Muhammadan houses in Kondaveedu also were engaged in this industry. There remains only one old man in the last place who knows the process while in Nyamadala only four families now evince any interest in the industry. In Aminjikarai, there are ten families making pasteboard and four families making white paper. The industry appears to have been in a fairly flourishing state till the advent of fine imported paper. Subsequent attempts to revive the industry at Nyamadala have not been a success. The chief raw materials used are waste paper, worn out aloe ropes, old gunny bags, fishermen's nets, etc. The raw material is soaked in running water, if available, for a day, which serves as a kind of washing. It is then taken out, cut into pieces and well pounded for about 4 hours. The material to be beaten is placed in a small masonry tank and by a lever arrangement which is worked by a man with his leg, a heavy long arm of the lever is made to fall on the material on the stone floor of the well. The fibre after being beaten to a fine pulp is again taken to be washed. After the washing is over, the material is mixed with slaked lime in specified proportions by trampling with the feet on a stone for an hour or two. The whole mass is then made into a heap and exposed to the sun for a couple of days. After this, the heap is again pounded, washed well, smeared again with lime, heaped and dried as before, the operation being repeated not less than six times for a rough kind of paper. If a finer paper is required, these operations have to be done at least eight times or even more. No alkali other than lime is used. The first washing is done in a basket and the other washings are done in a cloth as described below, because of the finer state of division of the material in the later stages. Two men stand in the water, put the material to be washed in a cloth and dip it in water after tying the ends of the cloth to their waists. The material is then washed with the hands. After the final washing, the pulp is made into balls. This process takes about 25 days, the greatest share of the time and labour involved in the whole process. The remaining processes are carried out in the houses of the paper-makers, where there are vats made of lime and mortar. The balls of pulp are put in a pot of clean water, well mixed, washed again and left overnight to settle. Three such balls are put in the vat filled with clean water. The papermaker then sits on the wall of the vat, and dips a square wooden frame with cross bars, attached to which is a fine screen made of grass stalks sewn together and kept tight, and draws the screen slowly and evenly to the top very dexterously. The screen acts as a sieve and a uniform filament of pulp is left on it as it is drawn out of the water. This is the most important stage of the process and is done by people who are experts in the art. The frame attached to the screen is then held for a moment for the water to drain off. If a thick paper is required, the layers are taken more than once. The screen is now detached from the frame, drained, and inverted on a flat board with the paper face downwards and the screen rolled, when the wet sheet is left on the board. A piece of cloth is spread over the paper and another sheet of paper is similarly taken and placed on it, the process being repeated until a few hundred sheets are made. A smooth sheet of paper is laid over them and over these a smooth piece of wood, and people sit on the latter for some hours to squeeze out the water. The sheets are then taken out and placed on cloths spread with ashes with a view to the absorption of any further water that may be left in them. The sheets are then taken out and pasted on to the chunam-covered walls of the building overnight. Next morning, they are removed and dried on ropes just like cloths until they are dry. They are then sized as follows:—Two seers of rice is used for every 120 sheets of paper, the rice being well pounded, soaked in water overnight, cleaned and washed. This is again pounded well in a roller with water and made into a paste. A pot is filled with water and the water boiled. When the water is boiling, the rice paste is run into it with constant stirring and then allowed to cool. A cushion-like pad is made from a gunny bag, dipped into the starch solution and rubbed over one side of the paper. The paper

Paper.

is then dried over a rope. After one side is dry, the other side is similarly smeared with starch and dried. These sheets are then piled and weighted for a day or two. The sheets are then taken twelve at a time, water is sprinkled very sparingly and they are again weighted for about a day. They are then polished by being spread on a big plank of wood, smeared lightly with oil and then rubbed over with a smooth big conical stone on both sides. They are then cut into standard sizes and kept weighted till they are taken to the market, when they are rolled into rolls of 120 sheets usually and sold as such. It was suggested that the industry might be improved as a cottage industry in certain directions and as a result of the investigations made by the Research Chemist of the Department of Industries it was decided to undertake the following experiments :—

(i) A comparative experiment in the breaking up of the fibre using (*a*) lime as was done previously by the workers, (*b*) using lime and soda (i) without the use of heat and (ii) using heat.

(ii) An experiment to determine the possibility of bleaching the pulp and ascertain the cost of the same as far as possible.

(iii) An experiment to ascertain the extent of saving in sizing.

These experiments have indicated that as the process of soaking now employed is tedious, if, instead of soaking the paper cuttings in water and trampling the stuff with the feet, the cuttings are soaked in a solution of sodium carbonate, the pulping can be done more quickly and easily and the resultant product is also cleaner. The extra cost of soda ash might be offset by a reduction in the cost of labour involved. Similarly if hemp fibres are soaked in alkaline liquors, the fibre soaks quickly and can be pulped far more easily. It was also found that soaking in a mixture of lime and sodium carbonate and then heating for a few hours facilitate easy pulping. The experiments also indicated the advantages of bleaching and loading which are not now resorted to by the paper makers. It was also ascertained that it would be advantageous to use prepared starches like pearl starch and also resin in place of rice which is the material used by the workers. The use of the former though not the latter is cheaper. In the course of the experiments, brown and blue paper, straw boards, flat files and docket sheets of fairly good quality were also prepared and their costings worked out.

Palampores. 3. *Kalamkari or printed cloth manufacture.*—Masulipatam which is the chief seat of the industry is famous for its palampores. At one time they used to be exported to Persia in considerable quantities. The industry suffered severely in 1864 from the effects of the tidal wave which practically wiped out a part of the town. Even in 1886, there were 145 families of palampore printers but there are at present only two big ‘ Kharkhanas ’ (firms) at the place engaging about 55 men and 85 women. Besides these there are about 25 families (40 men and 80 women) in Saradayapeta and Ramudupeta villages who are in the employ of the above two firms. The printed cotton cloths of Masulipatam are of three distinct types—(1) block printed only, (2) block printed and hand-painted (or stained), and (3) hand painted only. The last mentioned variety is not produced to any great extent nowadays. These cloths are generally known as ‘ palampores ’ and consist of canopies, screen cloths, prayer cloths, bedsheets, table covers, men’s handkerchiefs, turbans, cloth for Muhammadan jackets and women’s cloths. Canopies and screens and other cloths which are entirely hand-painted are generally made of patterns of the tree of life type or of mythological subjects and are only made to order, and there are only two workmen at present skilled in this art. The ordinary trade is in block printed canopies, screens, bedcovers and women’s and men’s cloths. Of these, the canopies, screens and bedsheets are best known to Europeans. The other varieties are used nearly exclusively by Muhammadans and find a fair market in Persia. The selection of fabrics for the manufacture of these goods depends upon the particular purpose which the material is expected to serve, and also upon the process to be employed in printing or painting the designs. Generally, English cambrics are used for paintings by hand, and cheap mull, kora mull, longcloth, and jaconets for printing designs. Khaddar cloth is not at all suitable for Kalamkari work. The printing is usually done in two colours—fine deep red and black—though some more colours—light blue, dark blue, green, yellow and dark brown—are employed occasionally. The principal dyes now employed are black jet, alizarine red [which replaced the old ‘ cheyroot ’ (Hedyotis Umbellata) dyeing], indigo blue and yellow prepared from ‘ allikaya ’ or ‘ alidikaya ’ (leaf galls of Terminalia chebula). The cloth that has to be block printed is first washed twice in a mixture of water with buffalo or sheep dung and dried. A solution of powdered gallnut (myrabolams) is next prepared and the cloth when dry is steeped in this and dried again. After this process the cloth is printed with black jet mixed with gummy water. It is again dipped in a solution made of alizarine and ‘ jaji ’ leaf which gives a fast colour to the black jet. For dyeing in red, the cloth has to undergo the same process of being washed twice in buffalo or sheep dung mixture and dipped in myrabolam solution and dried. Then in a solution of alum mixed with gummy water the blocks are dipped and printed on the cotton

fabric which is thereafter washed and put in an alizarine solution. Subsequently the black print is transferred on to the cloth which is washed thereafter. Many of the cheaper palampores are left in this state, but if a second colour is required, say blue, all the features of the patterns which are required to remain red are covered with melted wax applied with an instrument somewhat resembling the draughtsman's inking pen with the addition of a large pouch containing the wax through which the handle of the instrument passes. When this operation is complete, the cloth must be dipped in the dye of the required second colour. The waxed portions of the cloth, of course, are not affected by the dye. The wax is afterwards removed by boiling the cloth. For every additional colour required the waxing process must be repeated. The wax is thus used as a resist for the new dye. After the printing is finished, the cloth is finally washed and sized with kanji water and polished by rubbing with a smooth chank shell. It is more usual however, to merely fold the cloth when it is dry after the application of the starch solution and hammer it with a wooden mallet which makes it smooth. There has been a considerable decline in the demand for the ordinary dyed and printed cloths on account of competition with cheap imported cloths and the change in the tastes of the people, who are now preferring the coloured cloths of lighter shades to the dark coloured brilliant cloths of South India. There has also been a great falling off in colouring, design and workmanship of the Masulipatam fabrics. The causes that led to the loss of the Persian market were investigated in 1922 and it was ascertained that owing to the change of fashion, the demand for these palampores which were originally extensively used as a dress material both by men and women was not so keen as it used to be and was being largely met by cheaper printed palampores from Manchester and the cheap imitation palampores made locally at Ispahan for bed covers. As the quality of the product had considerably deteriorated, it was considered that if the firms could be induced to concentrate on the production of the finer patterns with which their reputation was originally made and if they were successful in recapturing 'the first fine careless rapture' of the old patterns, there should not be much difficulty in finding a market, albeit a limited one, for such good quality prints. Accordingly a few pairs of palampores of imported patterns were made and sent to the Victoria Technical Institute but they were sold only with great difficulty and after reducing the prices. It is understood that the urban centres in Persia have adopted European dress and that palampores could, if at all, only find a sale now in the remoter rural parts of Persia.

4. *Manufacture of (a) pithwork including garlands, (b) musical instruments and (c) ornamental fans in Tanjore.*—These industries are carried on at Tanjore, which as one of the oldest centres of culture in the presidency has always had a reputation for the practice of the arts of luxury and refinement.

Pith work.

(*a*) A class of work for which the town used to be famous was the making of pith images, garlands, flowers, cars, temples, bouquets, etc.

Pith is obtained from street vendors or growers, chiefly in Shiyali and Mannargudi and in villages in the Chidambaram, Mayavaram and Tanjore taluks. It is then dried and skinned and cut with a long sharp knife into wafers which are curled and pinned into shapes of beautiful flowers, figures and the like and decorated with gilded metal. The pith is then dyed in rose, red, green, yellow, orange and other colours, synthetic dyes being used for the purpose. Nagada or lace is purchased from local shops at four annas a reel. It is coloured yellow by smoking it with turmeric powder to give the appearance of gold and wound round garlands to enhance their beauty. The merit of the work seems to consist in the design and the exquisite arrangement of bits of pith. The work is complicated and there is not at present much demand for the finished articles as they are mostly of the nature of toys. A model of the Tanjore church was made and presented to the Vatican and this cost Rs. 200 but such demands are few and far between. The Tanjore pith garlands for which the town was once well known have been largely replaced by gold and silver lace garlands. This industry flourished at the time of the Tanjore Rajas but it is dying out owing to change of fashion, lack of sufficient patronage, and the difficulty experienced in preserving the articles long from the attack of moths.

Musica instruments.

(*b*) The manufacture of musical instruments flourished in Tanjore some 70 years ago and there were then 20 workers engaged in the industry. There are now only four males pursuing this industry wholetime, and they trace their origin to the same ancestor. The instruments manufactured are Thambur, Veena, Fiddle, Sarboth, Thabilla, Kanjira, Mrithangum, etc. The basic material for all these is the jackwood obtained from Pattukottai and Orathanad which lends itself easily to scooping, polishing and engraving. Its colour and light weight give it its peculiar value. Workmen and others who have experience of the musical instruments say that with teak or any other wood, it is not possible to make instruments of such beauty or resonance as those made of jackwood. The veena consists of three main parts, a bob end which is bulged out and hollow, the middle stem which is also hollow and the tail end which is bent inwards and is partly

hollow and to which is attached a separate wooden piece worked into the figure of ' yali ' with mouth wide open. These parts are joined by lac and the smaller parts by glue. Ivory or for the sake of cheapness horn, is taken in small fine chips and cut into the required shape and size and worked into several designs. It is first fixed with glue and with bamboo nails along the corners and the rims of the veena. Several floral designs and reliefs are also cut on it by a fine chisel. Fine lac either pure or coloured is heated and rubbed over it. The lac goes into the depressions and when it is cooled, it is gently scraped by means of a chisel. This leaves behind good floral designs of different colours upon the ivory or horn. The greatest art is involved in making the sounding board of the tamburu, veena and other instruments, since the least flaw in the workmanship will spoil the tone and reduce considerably its value. This sounding board is cut out of a large solid block of wood. The nearness of the raw material, jackwood, and the encouragement given to the industry in the time of the former rulers of Tanjore have probably given rise to this industry in the locality. Owing partly to the decline in the musical profession in Tanjore since the death of the Rajas and partly to the fact that inferior articles made at Palghat and Bangalore are reported to undersell the work, the industry has ceased to be a flourishing one.

(*c*) Ornamental fans and some other curious nicknacks were made at Tanjore at one time on a large scale. Palmyra leaves, teak wood and mica are the chief requisites. After making an ordinary fan from palmyra leaf, it used to be artistically decorated with mica pieces and gold leaves and then colour-varnished and painted with designs of flowers, the fringe being adorned with silk thread of different colours. This ornamental fan costs Re. 1–8–0 to make and is sold at Rs. 2. In one day 4 such fans can be worked but sales are few and far between. Formerly the fans were used in marriages and public functions by the more important guests whilst they were also much sought after as curios. The industry is declining.

Indigo. 5. *Indigo industry.*—The historical record of indigo dates back almost to the beginning of the Christian era. India occupied the foremost place among indigo-producing countries in the world, until the advent of synthetic dyes about the close of the last century. A decline in the exports showed itself almost immediately and though at one time it was hoped that the introduction of the Natal-Java plant giving a higher yield of indigo-tin with improved methods of cultivation and extraction, might stem the tide, this retrogression proceeded steadily until the declaration of hostilities in 1914. In 1913–14, the area under cultivation in India was scarcely more than a tenth of that in 1895–96. The following table exhibits the area and yield of indigo in the Madras Presidency in 1914–15 and 1922–23 :—

	Area. ACS.	Production. CWT.		Area. ACS.	Production. CWT.
1914–15 ..	71,700	13,600	1922–23 ..	141,300	32,600

The figures for Madras for later years are given below :—

Year.	Area in acres.	Estimated yield in cwt. *	Year.	Area in acres.	Estimated yield in cwt. *
1923–24 ..	89,380	20,670	1927–28 ..	40,181	7,400
1924–25 ..	70,226	17,120	1928–29 ..	48,573	10,920
1925–26 ..	77,627	19,080	1929–30 ..	34,600	8,000
1926–27 ..	53,639	11,070	1930–31 ..	35,600 †	8,800 †

* The yield is largely theoretical. There is no information about the quantity actually manufactured into dye or used as green manure, but the latter practice is said to be on the increase. The yield given is that which would be obtained if the whole crop were manufactured into dye.

† Estimated acreage and yield.

The area and yield have been declining, though during the last three years, the latter shows some increase over the figures for the previous year. A large portion of the crop is understood to be ploughed into wet (irrigated) lands as manure and is not converted into dye. For purposes of showing the position occupied by Madras, the area and yield of India during the last two years are given below :—

	Acres.	Yield in cwt.		Acres.	Yield in cwt.
1929–30	66,200	14,400	1930–31	59,700	13,500

The exports have also contracted. Madras exported 26,161 cwt. of indigo in 1915–16 in which year the figures for all India were the highest subsequent to the declaration of war. Except in 1917–18 in which only 3,411 cwt. were exported, exports up to 1919–20 from Madras were over 10,000 cwt. in each year, over 1,000 cwt. up to 1924–25 and during 1928–29, 1929–30 and 1930–31 the exports were 261, 326 and 239 cwt., respectively. The process of manufacture is as follows :—After harvesting, the roots of the plants are chopped off, and the plant, leaves and stems thrown into a masonry cistern or vat constructed for the purpose. Water is then poured in and when the plants have been well soaked and have given off the dye, the whole mass is well stirred and the water let into a second cistern. The waste product is again treated with water. From the second cistern, the

clear water is drawn off and the sediment is again stirred and let into another cistern and so on. When a clear, clean sediment has been obtained, the product is cut up into pieces for sale and export.

6. *Kondapalli toy industry.*—Strictly speaking, this industry though declining is not perhaps disappearing. Some 30 years ago, about 50 families were engaged in this industry. Now there are only 15 families making toys in Kondapalli, a few of them having left for Nagpur and other places to earn their livelihood as the industry had become unprofitable. This industry is the sole occupation of a particular caste of people known as 'Arya Kshatriyas', 'Nakshas', or 'Muchis'. There are altogether 25 workmen who are skilled in the making of toys. Two kinds of toys are made in the village. Toys made of wood are chiefly small figures or groups of figures, carved and painted by men only. Cowdung toys are prepared by women, especially by poor widows, during spare hours after attending to their household duties. Both kinds of toys are covered with attractive colour designs and finished with a coat of varnish but the wooden toys alone are popular because they are more durable. Cowdung toys are far simpler to make and sell at three pies to six pies each in fairs and festivals. The toy makers purchase wood at Re. 1 per head load which will yield about Rs. 25 worth of 3-inch toys or Rs. 15 worth of bigger toys. The timber is allowed to dry in the air for some weeks before being used. For making trays, fancy boxes, etc., the timber is sawn into planks of varying thickness and further dried. The implements used for carving the toys are very simple and consist of a sharp curved knife, a file, saw, bodkin, a small hammer and a smooth piece of horn for polishing the toys. The process of manufacture is a tedious one and the skill and dexterity of the workmen have to be brought into play at every stage. In the making of, for instance, a horse, the workman takes up a small piece of wood and dresses it up with a sharp knife so that the trunk of the animal is first obtained. Then he takes a smaller piece of wood and with the end of the knife shapes it to form the head, while four small sticks are shaped into legs. All the limbs are glued together with a paste prepared by a mixture of fine sawdust and tamarind seeds, and the inequalities are filled in again with the tamarind paste and hemp fibre. The toy is thereafter polished with a fine iron file and given two or three coats of colouring according to conventional schemes. A coat of varnish is given for some toys, and others especially 3-inch toys, are sold without being varnished. Only foreign dyes—red, green, white, blue, yellow and chocolate are used. The other varieties of colours (deep and light) are prepared by an intermixture of these colours in gum water. The sizes of toys prepared vary from 2 inches to 11 inches. Human figures, animals, birds, palmyra trees, trays, fancy boxes, and also toy-sets representing dancing, band, courts, shops, temples, buildings, etc., are made. Boxes containing 24 three-inch human toys representing different castes, sitting toys representing the several occupations of the people, 'Dasavataram' sets and palmyra trees are in comparatively large demand and sell best. Fancy trays and boxes are generally purchased by Muhammadans. The workmen adhere rigidly to the old designs and patterns, though they are capable of producing toys according to any new designs or patterns which may be supplied to them. No attempt has been made up to now to introduce new designs or patterns, the designs in use about three hundred years ago being still followed. On an average the daily outturn of a worker is six to eight toys of 3-inch size. A box containing 24 three-inch dolls and worth Rs. 3 to Rs. 3–8–0 is prepared by the worker within three days. Two days time is taken by a worker for making one dozen dolls of 6-inch size. This set of a dozen dolls is sold at Rs. 2 to Rs. 2–8–0. The cost of manufacture of a box of 3-inch dolls is given below:— Toys.

	RS.	A.	P.
Wood	0	4	0
Colours	0	4	0
Wages for three days	2	8	0
Total ..	3	0	0

The monthly turnover of the master workman is Rs. 30 worth of dolls, while that of an ordinary workman is Rs. 15 worth. The total outturn in the town in a year is at present estimated at about Rs. 4,200. The toys are taken to Madras, Bangalore and Mysore during Christmas and Dasara and occasionally to Bombay. During each trip about Rs. 400 to Rs. 500 worth of toys are taken and disposed of. Every year Rs. 600 to Rs. 1,000 worth of toys are handed over to the Victoria Technical Institute at Madras which, it is understood, exports a portion to foreign countries. Occasionally, shopkeepers of Berhampur, Vizagapatam, Madura, Trichinopoly, Nilgiris, Bangalore and Mysore send orders ranging from Rs. 25 to Rs. 100. The toys are rarely exhibited for sale in fairs, festivals or markets and they are not advertised. Hence Kondapalli toys are rarely known outside the presidency. The industry was in a flourishing state some years ago and the toys made were far superior to what are produced at present, the artistic side and quality having been to some extent neglected with a view to bringing down the cost of production. There

is also competition among the concerns and consequently the prices are finely cut so that the wages which the workers receive are low. The toy-makers are too poor to be able to hold large stocks and to comply with large orders regularly and promptly and owing to competition from toys made in other parts of the country and imported ones, the industry is declining.

Lacquer.

7. *Lacquer work.*—The industry is carried on on a small scale at Nossam, a village 17 miles from Koilkuntla, in Kurnool town, Srungavarapukota in Vizagapatam district and Mandasa in Ganjam district. Formerly lacquer ware was produced at Koilkuntla and Nandyal and in four or five villages in Vizagapatam district. In Kurnool district there are three families of the Visvabrahman caste, two in Nossam and one in Kurnool. They ordinarily prepare fans, trays of different shapes (round, octagonal and oval) and small kerchief boxes and work on them with lacquer. The work is artistic and the designs are of natural objects representing floral life. The wood used in the manufacture is ' puliki ', ' medi ', and ' pedda vepa ' but the worker in Kurnool often uses ready-made trays of jackwood imported from Palghat. The first operation in the work is to get a smooth surface and this is obtained by coating the wood with a white ' sudha ' (earth). White lead also is occasionally used in the better work. Designs of birds and plants are worked by hand on the articles with a brush and coloured with appropriate tints, and where figures in relief are required, they are produced by the use of a sticky paste made of finely powdered cowrie. After giving a coating of varnish thin silver foils are used and a further coating of varnish is given. This gives an attractive golden yellow colour to the article. The colours do not fade quickly and the brightness of the tints is preserved for a number of years. The Nossam and Kurnool workers appear to be patronized by the Victoria Technical Institute, Madras.

At Srungavarapukota in Vizagapatam district, bharanis, chess-boards, cups and cots are manufactured by five families of Visvabrahmans, with certain species of wood known as ' chitti ankudu ', ' lolika ', ' garuvudu ', ' pittamarri ', ' gunpina ' and mango which are procurable from the estate forest of Vizianagram on payment of a permit fee of As. 1–6 per head load to the estate. The average annual outturn of lacquer work in this village is estimated at Rs. 1,500 and all this is taken over by the dealers of Vizianagram, some of whom finance the workers by supplying them with lac, colours, etc., and giving small advances without interest. The lacquer wares prepared here are disposed of within the district especially at Vizianagram, Simhachalam, Vizagapatam and Anakapalle. The industry once existed in a flourishing condition in other places in the Vizagapatam district such as Nakkapalle and Chandanadu in Sarvasiddhi taluk and Lakkavarapukota in Srungavarapukota taluk, but is now completely extinct at these places, except at Chandanadu where there are still a few families who do mere plain work such as painting ' palkis ' (palanquins), bedsteads, boxes, statues, etc. Even at Srungavarapukota the industry is dying out and the artisans, with their limited resources, cannot afford to devote very much time to the manufacture of fancy articles, the demand for which is restricted.

Boat-building.

8. *Boat-building industry.*—Tallarevu on the Coringa river, near Cocanada was at one time the seat of a large shipbuilding industry but with the advent of steam and the silting up of the river, the industry received a set back. With the outbreak of the war and the shortage of vessels, there was a temporary revival, but the industry is now chiefly confined to the building of boats and country craft for carrying cargo to the steamers that anchor at some distance from the port of Cocanada. Smaller boats are also built in Dowlaishweram, Nelapalli, Chintalanaka and Kotapalli. The timber required is got from Rajahmundry where the Godavari teakwood drifted down the river is stocked and sold. A boat of ordinary size with a holding capacity of 700 to 800 bags of grain costs Rs. 5,000 to Rs. 6,000 and can be built in two months with 25 men working. A large portion of the district being deltaic, the products of this area are carried by water as such transport is cheaper than rail and road transport. The bulk of the passenger traffic also moves by water on boats built for the purpose and it is on this account that the boat-building industry is not yet extinct.

Jutkas.

9. *Jutka building.*—Jutka building is carried on in Vellore in North Arcot district and although this industry is no doubt carried on in several places in the presidency, Vellore has earned a name for its jutkas. There are about five workshops engaged in the industry and the annual production in the town is about 100 jutkas. The main kinds of wood used are teak for spikes and wheels and babul for brackets. The cost of iron employed in a jutka is about Rs. 23 and the wages for building it with top complete amount to about Rs. 50. A jutka can be built in ten days and costs about Rs. 150. The jutkas built in Vellore were formerly in large demand in Bezwada, Gooty, Raichur, Mysore and also in the southern districts but the industry has declined now, owing apparently to the development of motor transport and opening up of the country by railways.

10. *Gold and silver lace thread industry.*—Madura town was once famous for the manufacture of gold and silver thread called 'lace' which figures so largely in the borders of the more expensive kinds of cloths and turbans; but the industry is now on the decline as the local weavers use only the cheaper French and English threads. There are at present seven families of Muhammadans engaged in this industry in the town, supplying the demand from Tinnevelly and Malabar, where the lace is used for bordering towels. The silver thread is prepared by melting silver and lead in a crucible and casting the alloy in thin bars. These bars are hammered still thinner and then drawn through a series of holes of gradually diminishing sizes until they are transformed into exceedingly fine threads. Similarly gold thread is prepared by beating a silver bar, a cubit long, into $\frac{1}{2}$ inch thickness and covering it with gold plates before being drawn. Until the wire becomes $\frac{1}{18}$ inch thick it is drawn through an iron press and then through an apparatus consisting of two rollers revolving in opposite directions with a disc in the centre. The maker winds the wire round one roller and then takes one end through the disc and fixes it to the other roller, and twists it by a handle until the whole length of the lace passes through the disc and winds round the opposite roller. Then a disc with a smaller eye is fixed and the thread is passed through it and drawn and wound round the opposite roller. This process is repeated until the wire is drawn to the required fineness. After being drawn it is given over to women for being flattened. Three tolas of gold lace generally measure about 3,000 yards long and are sold for Rs. 8. The wages paid for drawing this length are Re. 1 and it takes two days for a man to draw the full length. A woman is paid eight annas for hammering the drawn wire into flat lace and she is able to do this in four days' time. The average net profit per three tolas, exclusive of the wages paid, is As. 8. Discs are obtained from France and are embedded with hard precious stones to lead the thread; the price of each disc varying according to the kind of precious stone used, ruby, sapphire, or diamond. Gold thread, when passed through one of these discs, assumes an exquisite degree of fineness and cannot be drawn further without breaking. Similarly, silver when drawn through a disc of appropriate size assumes the necessary degree of fineness. These discs generally last for two to three years. **Gold thread.**

Viravanallur (Tinnevelly) is the only place where the flattened silver threads of Madura are bought, twisted and smoothened with yellow colour. The thread is twisted round yarn after it is coloured yellow. The yarn used for twisting is 70s and 80s of red and white combined and this is thrown over a smooth bamboo pole planted horizontally and is weighted by two spindles at either extremity so that they may remain side by side. The spindle at one extremity of the yarn is twisted, while the other at the other end counterpoises it in position and when the yarn is twisting, the lace is gently introduced and is twisted along with the yarn. To impart yellow colour to the silver thread, turmeric powder in small quantities is sprinkled over a smoking paddy straw in small quantities. When it begins to fume, it is covered over with a mud pot with a perforated bottom turned upwards. As the smoke emanates through the holes, the threads are spread over it loosely and sprinkled over with turmeric powder and gently turned this side and that, until they attain a golden tinge. Great care is necessary in the operation as even a little overheating would char the whole thread. The lace thus manufactured is almost all consumed locally in the manufacture of fine male cloths with lace borders, and the surplus if any finds its way to Palghat and Malabar.

11. *Crochet lace industry.*—Although the lace and embroidery industry has of late been showing signs of decline, it is only the crochet lace section of it that could be considered as disappearing. The crochet lace industry is carried on chiefly in and around Narsapur and Palakole in the West Godavari district. It was introduced about the end of the last century by the Christian missions to give employment to Christian women and girls, and at one time a considerable number of women and girls above 8 years old, of all castes, mostly Christians, Pallis (fishermen caste) and Telagas, were engaged in this industry. The only raw materials and implements required are a hook and cotton. Most of the workers buy the thread locally or from an agency in Madras. On an average each woman works at her home for about six hours a day after attending to her household duties and earns 6 to 8 annas. The daily earning of a girl worker is at present 4 annas. A quick and skilful worker is said to earn about Rs. 15 and others about Rs. 12 per mensem. The merchants and the middlemen who trade in lace pay for the work by the piece, the price being determined by the quality of the work and the time spent in producing it and there are fixed prices for certain patterns which are made according to the required standard. Most patterns consist of a mixture of leaves, roses and edging worked together in the shape of a doyley or a table centre, etc. Some women specialize on leaves, others on roses, and others on edging. The more skilled workers join the separate parts together and hand over the finished work. The kinds of lace prepared are (1) doyleys, (2) table centres, (3) teacloth borders, (4) oval centres, (5) camisole tops, (6) bonnets, (7) pillow cases, (8) night-dress cases, (9) lace edgings (lace by the yard), (10) table runners, (11) pincushion **Crochet lace.**